FormsMaster 8000 Series

High Performance
Serial Matrix Printers

Operator's Manual

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Part Number 4339

This equipment has been tested and found to comply with the limits for a Class A Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference in which case the user will be required to correct the interference at his own expense.

The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emissions as set out by the ICES-003 standard, of the Canadian Department of Communications.

Cet appareil numérique n'émet pas de bruits radioélectroiques depassant les limites de Classe A prescrites dans la norme NMB-003 Édictée par le Ministre des Communications du Canada.

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Introduction

Thank you for purchasing a Printek FormsMaster 8000 Series Printer. This printer has been designed to provide years of service handling your most demanding printing requirements.

The FormsMaster 8000 Series printers offer higher throughput than all other printers in its class. In addition, an easy to use front panel combined with the ability to store ten different form configurations makes handling multiple forms as simple as a button press for the operator.

Models and Options

The FormsMaster 8000 and the FormsMaster 8003 differ only in the number of tractor paths available, one path or three.

Options available for both models include:

Coaxial and Twinaxial Interface
Coaxial IPDS Interface
Twinaxial IPDS Interface
Ethernet 10BaseT Interface
Imager Bar Code Coprocessor
ImagerPlus Bar Code Coprocessor
Print Stand (required for reduced sound levels)
Internal FormsCutter
Setup Module

Manual Contents

- ***Getting Started*** provides instructions for installation, setting up the computer interface, installing the ribbon cartridge, loading paper, and performing a printer self-test.
- ***Daily Operation*** provides more detailed descriptions of the features that are used most frequently. These include the "every day" buttons and indicators on the control panel, selecting or loading new forms, ejecting forms, changing the ribbon cartridge, aligning

print with preprinted forms, and causes for common error conditions.

- ***Printer Configuration*** provides detailed information on how to use Setup to permanently store parameters for each of the ten forms, parameters for the standard and optional interfaces, and parameters for other options.
- ***Specifying Forms*** provides tips for form construction and layout.
- ***Maintenance and Troubleshooting*** lists more serious error messages than discussed in the *Daily Operation* section, preventive maintenance, and how to obtain service.
- ***Advanced Setup Features*** provides information on how to set menu security.
- ***Using Remote Setup*** describes how to "set up" default parameters from a host computer.
- ***Using the Setup Module*** describes how the optional Setup Module can be used to copy Setup parameters from one printer to another.
- ***Printer Reset Conditions*** describes the state of the printer after power up or reset.
- ***Control Code and Escape Sequence Summaries*** lists the commands supported for each printer emulation.
- ***ASCII Character Tables*** show the characters for each character set.
- ***Specifications*** lists the operating ranges and ratings of the printer.
- ***Glossary of Terms*** provides definitions for terms used in this manual.

Getting Started

This chapter will use the fewest possible steps to get the first time user up and running quickly. You will be guided through the following steps:

Finding a suitable location and installing the printer
Setting up a host interface if necessary
Installing the ribbon cartridge
Loading paper
Performing a printer self-test

INSTALLATION

Before installation, a suitable site must be chosen. Suitable sites include offices, computer rooms, and most factory environments. The Printek FormsMaster printers have been designed to be rugged, heavy duty printers. As such, they will handle most harsh environments, but should not be placed in direct sunlight or in areas that will exceed the rated temperature, humidity, or power requirements. For details, refer to "Specifications" on page 121.

Once a site has been selected, the printer should be placed on a Printek Print Stand. The Printek print stand is especially recommended for the FormsMaster 8003 and is required to meet the low noise rating of the printer. Of course, another sturdy print stand or table with a slotted top for feeding paper into the bottom of printer may be used.

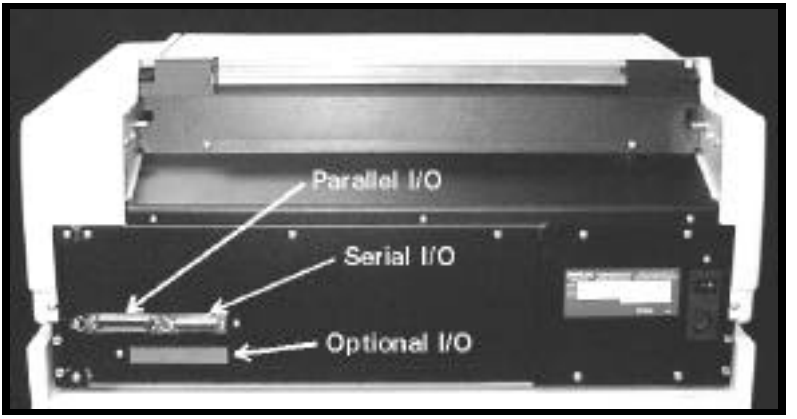
The print stand should be located in an area large enough to provide easy access to both the front of the printer and the rear for accessing printed output. Unpack the printer as described in the "FormsMaster 8000 Unpacking Instructions" and place the printer on the print stand.

Note: Placing the printer on the print stand is best accomplished with two people. Proper lifting technique should be observed.

Caution: Before connecting or turning on power, make sure that all shipping materials have been removed. These materials include

a cable tie that secures the print head carriage (open ribbon lid to access) and two cardboard tubes placed over the tractor shuttle shafts in the FormsMaster 8003 (open paper door on front of unit to access).

Next, connect the power cord supplied with the printer to the printer and an appropriate power outlet. Now connect the computer cable(s) to the appropriate interface. The picture below shows the location of the standard Parallel and RS-232C interface connectors on the rear panel of the printer. The area where an optional CX/TX, ICX, ITX, or LAN interface may be installed is also indicated.



Interface Connectors on Rear of Printer

INTERFACE SET UP

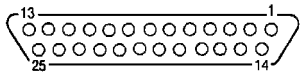
Depending upon which interface is being used to connect the printer to the host computer, some set up may or may not be required. Regardless of which interface is used, the FormsMaster 8000 will automatically detect which port is receiving data and make that port active. This is true of the standard parallel or serial ports and any optional interface that may be installed. For more information, see “Automatic Port Switching” on page 49.

The factory default settings for each interface should work well for most installations. However, the following paragraphs provide some basic information about each interface and also refer to the page number in the Configuration chapter where all the details for each interface are described. If you need to make changes to the default settings, please refer to "Introduction to Setup" on page 39 for instructions on how to access the printer's Setup menus.

Once you are comfortable that the interface settings match those required by your computer, proceed to the next section, "Installing the Ribbon Cartridge" on page 8.

RS-232C Serial Interface

This interface uses a 25 pin "D" connector as described below. The default settings are 9600 baud, 8 data bits, 1 stop bit, and no parity with hardware handshake on pin 11. The default printer emulation is Epson. For a complete description of all the default settings for this interface, refer to page 51.

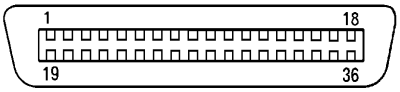


Pin	Signal
1	Chassis ground.
2	Transmit data. (Printer output).
3	Receive data. (Printer input).
4	Request to send (set). (Printer output).
5	Clear to send (ignored). (Printer input).
6	Data set ready (ignored). (Printer
7	input).
8	Signal ground.
11	Carrier detect (ignored). (Printer input).
20	Printer busy. (Printer output).
	Data terminal ready. (Printer output).

RS-232C Serial Interface Connector.

Parallel Interface

This interface uses the standard 36 pin parallel connector as shown below. The default printer emulation is Epson. For a complete description of all the default settings for this interface, refer to page 55.



Pin	Signal	Pin	Signal
1	$\overline{\text{DATA STROBE}}$	10	$\overline{\text{ACKNOWLEDGE}}$
19	DATA STROBE RTN	28	ACKNLG RETURN
2	DATA 1	11	BUSY
20	DATA 1 RETURN	29	BUSY RETURN
3	DATA 2	12	PAPER ERROR
21	DATA 2 RETURN	13	SELECT
4	DATA 3	14	$\overline{\text{AUTO FEED}}$
22	DATA 3 RETURN	16	±0V
5	DATA 4	17	CHASSIS GROUND
23	DATA 4 RETURN	18	+5V at 200mA Max.
6	DATA 5	31	$\overline{\text{INIT}}$
24	DATA 5 RETURN	30	INIT RTN
7	DATA 6	32	$\overline{\text{FAULT}}$
25	DATA 6 RETURN	35	+5V LOGIC HIGH
8	DATA 7	36	$\overline{\text{SELECT IN}}$
26	DATA 7 RETURN		
9	DATA 8		
27	DATA 8 RETURN		

Parallel Interface Connector

Ethernet 10BaseT

This interface uses a standard RJ-45 connector and the default printer emulation is Epson. For a complete description of all the default settings for this interface, refer to page 57. For additional software installation and operational information, please refer to the Axis manuals shipped with the unit (disregard the Axis physical installation information).

Coax/Twinax Interface

This interface automatically sets itself for either Coax Mode or Twinax Mode depending upon which adapter cable (coax BNC or twinax smart "T") is attached to the 15 pin "D" connector when the printer is powered on. Only the choices for the detected mode are available in the Setup menus.

For Coax Mode, the default emulation is for a 3287 printer. For a complete description of all the default settings for the Coax interface, refer to page 59.

For Twinax Mode, the default emulation is for a 4214 printer. For a complete description of all the default settings for the Twinax interface, refer to page 63.

IPDS Coax Interface

This interface uses a coax BNC adapter connected to the 15 pin "D" connector on the rear of the printer. The default values should work in most cases. For a complete description of all the default settings for this interface, refer to page 67.

IPDS Twinax Interface

This interface uses a twinax smart "T" adapter connected to the 15 pin "D" connector on the rear of the printer. The default values should work in most cases. For a complete description of all the default settings for this interface, refer to page 72.

INSTALLING THE RIBBON CARTRIDGE

The Printek FormsMaster printer has been designed to make installing Printek brand ribbons a simple, clean process. Unlike other printers, there is no need to touch the ribbon fabric or deal with difficult to position ribbon guides. The following sections explain why the use of Printek brand ribbons should be important to you and will guide you through installing the ribbon cartridge.

Why Use Only Printek® Brand Ribbons

Printek® Brand Ribbon Label

Printek brand ribbons can be identified by the above label on each ribbon. There are many reasons to use only Printek brand ribbons in your FormsMaster 8000 series printer. First of all, ***using only Printek brand ribbons will automatically extend the print head warranty to two years*** instead of one year.

The reason this is possible is that Printek brand ribbons are manufactured to much higher quality standards than those offered by other manufacturers. This provides not only longer print head life, but also longer ribbon life… ***23 million characters*** as compared to only 15 million characters from some generic ribbons.

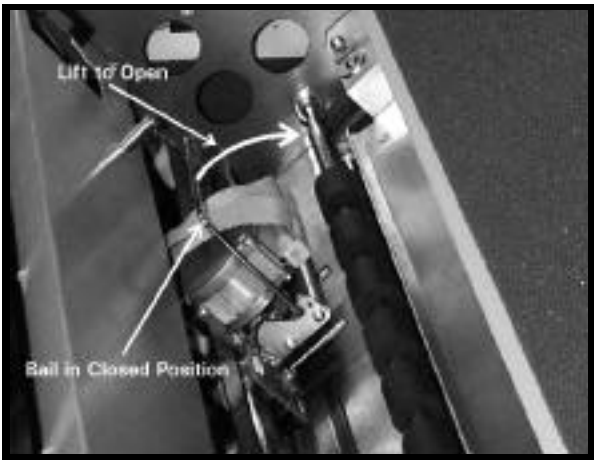
Remember that using *only* Printek brand ribbons is important because the wear that is started and the contamination that remains from even one inferior ribbon will continue to damage the print head. Also, damage to other printer components which is caused by the use of non-Printek ribbons will not be covered by the printer's warranty.

Using inferior ribbons would be like using poor quality fuel in your automobile. Premature engine failure and poor performance leading up to the failure would be the best you could expect.

Other useful features available only with the use of Printek brand ribbons are that the printer will not allow printing if a ribbon is not installed, and the printer will alert the operator when a ribbon needs to be changed.

Ribbon Installation

1. Open the ribbon lid on top of the printer and position the print head for ribbon loading by lifting the ribbon loading handle as indicated in the following picture.



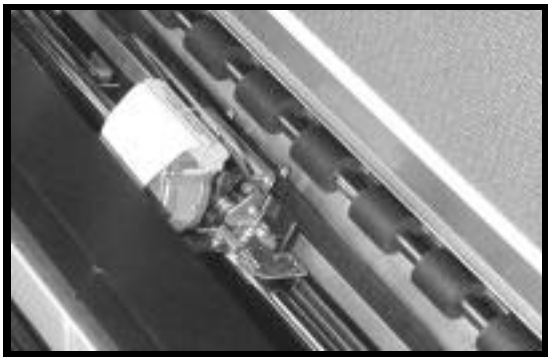
Opening the Ribbon Loading Handle

2. Remove the new ribbon from its plastic bag and make sure the ribbon fabric is taut by turning the knob on top of the ribbon cartridge in a counterclockwise direction as indicated by the arrow on the cartridge.

3. With the right hand end of the ribbon tilted down, insert the tab on the end of the cartridge into the opening in the ribbon tray.

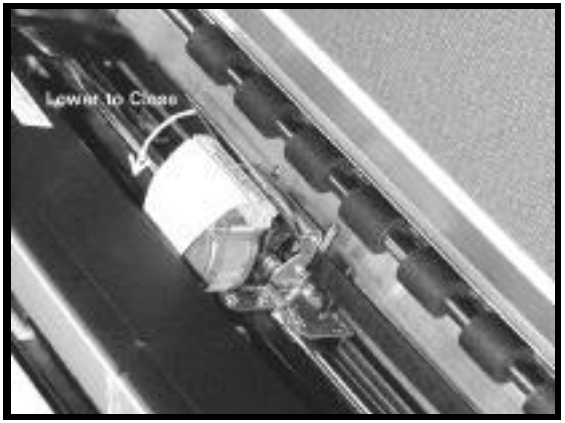
Installing the Ribbon Cartridge

4. Now lower the left end of the cartridge down while guiding the ribbon fabric between the nose of the print head and the ribbon guide pins. Continue to lower the cartridge until the tab on the left end of the cartridge snaps into place.



Ribbon Guided Between the Print Head and Guide Pins

5. Finally, lower the ribbon loading handle to its original position.



Closing the Ribbon Load Handle

6. Close the ribbon lid on top of the printer.

LOADING PAPER

When shipped from the factory, the basic configuration for all ten forms is an eleven inch form, six lines per inch, and ten characters per inch. If the forms you are loading do not match these requirements, please refer to the "Printer Configuration" chapter on page 39 and review the "Using Setup" and "Forms Menu" sections.

Please refer to the appropriate section below for loading paper in the FormsMaster 8000 or FormsMaster 8003.

FormsMaster 8000 Single Tractor Model

1. Make sure the printer is powered on and that the printer is off line (ONLINE indicator flashing red).
2. Lift open the paper door on the front of the printer to expose the paper feed tractors as shown below.

FormsMaster 8000 Tractors

3. Open the doors on each tractor.
4. Feed the paper up through the bottom of the printer and position the holes in the edge of the paper over the pins in the left tractor while making sure that the paper will not extend above the top of the tractors. Then close the tractor door.

Note: The left tractor position is not adjustable. If it is necessary to adjust where printing begins, refer to "Aligning Print" in the "Daily Operation" section of this manual.

5. Now position the paper in the right tractor in the same fashion. If necessary, the position of the right tractor may be adjusted. To do so, move the lever on the side of the tractor down to unlock the tractor and slide the tractor sideways on the shafts. If necessary, the paper guides between the tractors may be slid in either direction to accommodate the form width. Make sure that the guides are spaced evenly between the tractors.

   After the paper is placed in the tractor and the door is closed, position the tractor far enough to the right so that there is no buckle in the paper between the tractors, but not so tight that the holes in the paper are distorted. Lock the tractor in place by returning the lever to the up position.

6. Close the paper door.
7. Press the LOAD button.
8. Place the printer on line by pressing the ONLINE button.

FormsMaster 8003 TriTrak™ Model

The following instructions will guide you through loading all three tractor paths.

1. Make sure the printer is powered on and that the printer is off line (ONLINE indicator flashing red).
2. Press the UNLOAD button to move the tractor shuttle forward to the load position.
3. Lift open the paper door on the front of the printer to expose the paper feed tractors as shown in the following picture.

FormsMaster 8003 Tractors

Loading the Front Tractors

4. Open the doors on each tractor.

5. Feed the paper up through the bottom of the printer and position the holes in the edge of the paper over the pins in the left tractor while making sure that the paper will not extend above the top of the tractors. Then close the tractor door.

   Note: The left tractor position is not adjustable. If it is necessary to adjust where printing begins, refer to "Aligning Print" in the "Daily Operation" section of this manual.

6. Now position the paper in the right tractor in the same fashion. If necessary, the position of the right tractor may be adjusted. To do so, move the lever on the side of the tractor down to unlock the tractor and slide the tractor sideways on the shafts. If necessary, the paper guides between the tractors may be slid in either direction to accommodate the form width. Make sure that the guides are spaced evenly between the tractors.

   After the paper is placed in the tractor and the tractor door is closed, position the tractor far enough to the right so that there is no buckle in the paper between the tractors, but not so tight that the holes in the paper are distorted. Lock the tractor in place by returning the lever to the up position.

Loading the Center Tractors

7. Tilt the front tractors forward by pulling the green lever on the right hand side of the front tractor assembly forward.
8. Repeat steps 4 through 6 above.

Front Tractors Tilted Forward for Access to Center Tractors

Loading the Rear Tractors

9. Tilt the center tractors forward by pulling the green lever on the center tractor assembly forward.
10. Repeat steps 4 through 6 above.

Selecting Which Form to Print

11. Close the paper door.
12. Press the FORM SELECT button until the desired form is displayed and then press the LOAD button. The printer will now move the selected form into position for printing.
13. Place the printer on line by pressing the ONLINE button.

PRINTER SELF-TEST

The printer performs many self diagnostics each time power is turned on. If you wish to perform an actual printing test, use the following steps.

1. Make sure the printer is powered on with ribbon and paper loaded.
2. Take the printer off line (the ONLINE indicator will be flashing red).
3. Press the SETUP/MENU button four times to display TEST MENU on the front panel.
4. Press either of the ITEM buttons until Test Mode is displayed on the top line.
5. Press either of the VALUE buttons until Barber Pole is displayed on the bottom line.
6. Press the ONLINE button.
7. The printer will now exit Setup and begin printing a rotating character pattern. To stop or restart printing the test pattern, press the ONLINE button.
8. To take the printer out of the test mode, stop the test by pressing the ONLINE button.
9. Press the SETUP/MENU button four times to display TEST MENU.
10. Press either of the ITEM buttons until Test Mode is displayed on the top line.
11. Press either of the VALUE buttons until Off is displayed on the bottom line.
12. Press the ONLINE button.

Daily Operation

INTRODUCTION

This chapter describes how to use the "everyday" features of the FormsMaster 8000. The items covered are:

Control Panel Features – describes the most commonly used features of the printer's control panel.

Selecting and Loading Forms – describes how to insert paper or forms into the tractors and how to inform the printer of which forms are "loaded".

Ejecting and Tearing Off a Form – describes how to remove printed documents from the printer.

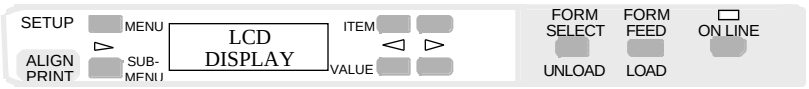
Installing a New Ribbon Cartridge – describes first time installation of the ribbon cartridge.

Aligning Print – describes how to precisely align where data is printed on a form.

Common Error Conditions – describes errors that may occur during normal printing operations.

CONTROL PANEL FEATURES

The following picture shows the printer's control panel. The control panel consists of a two line LCD display, an ONLINE status indicator, nine push button switches or "buttons", and a speaker. Each of these items is described below



Control Panel

LCD Display and Online Indicator

LCD Display — This two line by sixteen character display is used to convey several types of information. When the printer is on line and printing, or ready to print, the display will show the currently selected tractor path and the form currently loaded in that path. When the printer is off line, the display will continue to show this information, additional information based upon other buttons being pressed by the operator, or error conditions such as "Check Paper".

ONLINE Status Indicator — This is a multicolored LED which is used to display the following information:

Green: The printer is on line and ready to print.

Flashing Green: The printer is in the process of going back on line. Typically occurs after a new form has been loaded while the printer is confirming which forms are loaded in the tractors.

Flashing Red:	The printer is currently off line and cannot print. This may be due to the operator taking the printer off line or the printer may have detected an error condition, such as running out of paper, which requires operator intervention. If due to an error condition, the cause of the error will periodically be shown on the LCD display. After the cause of an error condition has been resolved, press the ONLINE button to clear the error. This will also place the printer back on line and allow printing to resume.
Yellow:	The printer is in the process of exiting the Setup mode and saving Setup values, or the printer is currently busy performing an operation with the optional Setup Module.
Flashing Yellow:	The user has pressed the SETUP button and entered the Setup mode (may be exited by pressing the ONLINE button after the desired changes have been made). For more information, see the chapter on "Printer Configuration".
Speaker	This device produces various tones to alert the operator when different error conditions occur. It may also be used to produce a tone when a bell character (ASCII BEL) is received from a host computer.

Push Buttons

ONLINE	This button toggles the printer between the on line and off line state. When the printer is on line, it may be printing or may begin printing at any time. To stop the printing or prevent printing from starting, use this button to take the printer off line (see "ONLINE Status Indicator" above). The printer must be off line

in order to use the other control panel buttons.

This button is also used to place the printer back on line following any error condition (ONLINE indicator is flashing Red), such as paper out. When pressed to go on line, the printer will first attempt to clear any errors. For example, if there is a paper out condition, the printer will attempt to load the form in the currently selected tractors and, if successful, go on line.

FORM FEED /LOAD

This button performs a number of different form feeding functions. The printer will automatically select the correct function to perform based upon the current position of the form.

LOAD:

- Loads the form that has been selected with the FORM SELECT button.

  If a the selected form is already recognized as "loaded" in the tractors, the printer will position the tractors if necessary (FormsMaster 8003) and advance the form to the print position.

  If the selected form is not currently considered to be loaded in the tractors (display shows <Not Loaded>), this button will change the status of this form to "loaded" and the bottom line of the display will show the path(s).

FORM FEED:

- If a form is currently loaded and perhaps partially printed, this button will advance the bottom of the current form to the tear bar so that it may be torn off.
- If a form has already been advanced to the tear bar, this button will advance the next

form to the tear bar.

FORM SELECT /UNLOAD

This button is used to access up to ten different forms which have been previously configured with the Setup menus (see the chapter on Printer Configuration for more information).

When this button is pressed, one of two functions will be performed.

UNLOAD:

- If a form is currently in position to be printed, this button will pull the form down until the top of the form is below the top of the tractors. In the FormsMaster 8003 this will also cause the tractor shuttle to move forward for easy access to all tractors.

FORM SELECT:

- If the form has already been pulled down to the tractors as described above, this button will cycle through all the available form choices. Forms which are not considered to be "loaded" in the tractors will flash <not loaded> on the bottom line of the display. In the FormsMaster 8003 the not loaded message will alternate with the tractor path assigned to that form. For more information, see the following section on "Selecting and Loading Forms".

ALIGN PRINT

This button will access the horizontal and vertical print adjustment settings for the currently selected form.

When ALIGN PRINT is pressed, the horizontal adjustment is shown first. Pressing the VALUE buttons will move the print position on the line left or right by 0.01 inches for each press

of a button as indicated on the display. The arrows to the side of the number will indicate the direction the print will be moved.

To access the vertical adjustment, press either ITEM button. Pressing the VALUE buttons will now move the print up or down on the page by 0.01 inches for each press of a button as indicated on the display. The arrow to the right of the number will indicate the direction the print will be moved.

For a more detailed description, see "Aligning Print" later in this chapter.

SETUP

This button is used to set up the various operating parameters of the printer for forms, interfaces, etc. This button is not used on a daily basis. For more information see the chapter on "Printer Configuration".

SELECTING AND LOADING FORMS

Note: A form is not considered "loaded" by merely placing the form in the tractors. To prevent printing on the wrong form, the printer must be made aware of what form(s) are currently loaded. When a new form is placed in the tractors, the form must be "loaded" using the control panel as described in the next section, "Loading a Different Form in the Tractors".

Selecting a Form Already Loaded in the Tractors

To select a form that is already loaded in the tractors, take the printer off line and press the FORM SELECT button until that form is displayed (a form that is not considered to be loaded will flash <Not Loaded> on the bottom line of the display). The form selection will be displayed as FORM 0 through FORM 9 or as the actual name of the form if that has been set up.

To position the form for printing, you may press the FORM FEED button which will position the form, or you may press the ONLINE button which will both position the form and place the printer on line.

Loading a New or Different Form In the Tractors

This section describes how to "load" a form in the tractors. This involves physically placing the paper or form in the tractor mechanism and then informing the printer that the new form is present.

Select the Form to be Loaded

1. Take the printer off line by pressing the ONLINE button. The ONLINE indicator should now be flashing red.
2. Press the FORM SELECT/UNLOAD button. This will move the current form from the print position down to the tractors for removal. In the case of the FormsMaster 8003 this will also move the shuttle forward for easy access to all tractor paths.

3. Continue to press the FORM SELECT button until the desired form name is shown on the top line of the display. The form name will be FORM 0 through FORM 9 or the actual name of the form if the name has been set in Setup. If the desired form is not considered to be "loaded" by the printer, <Not Loaded> will flash on the bottom line of the display. In the case of the FormsMaster 8003 the not loaded message will alternate with the path(s) that this form is to be loaded in.

Loading the Form in the Tractors

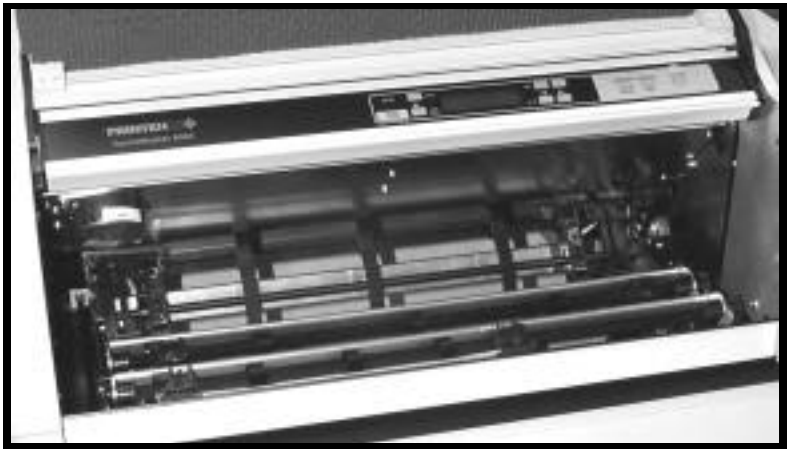
4. Open the paper door on the front of the printer. This will provide access to the tractors as shown below. If your printer is a FormsMaster 8000, only one set of tractors will be available and you may skip ahead to step 6.

FormsMaster 8003 tractors

5. Depending upon which path(s) the new form is to be placed in, you may need to tilt the front and/or center tractors forward as shown.

FormsMaster 8003 with front and center tractors tilted forward.

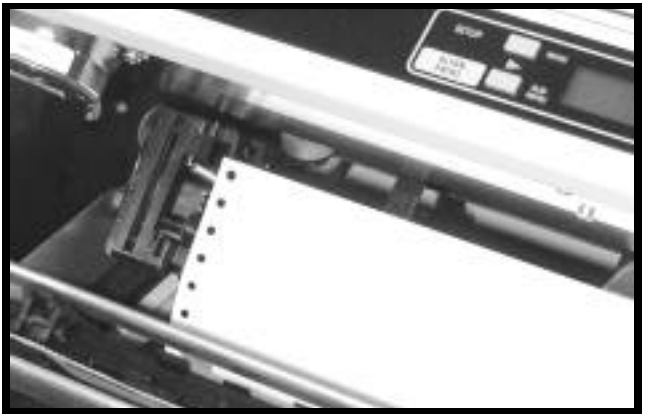
6. Open the tractor doors and remove the old form.



FormsMaster 8003 with rear path empty

7. If the new form is a different width than the previous form, unlock the right tractor and move it to approximately the new position. Note that the left tractor position is fixed and may not be moved.

8. Place the left edge of the new form in the left tractor with the holes aligned with tractor pins. Make sure that the top edge of the form does not extend above the top of the tractors.

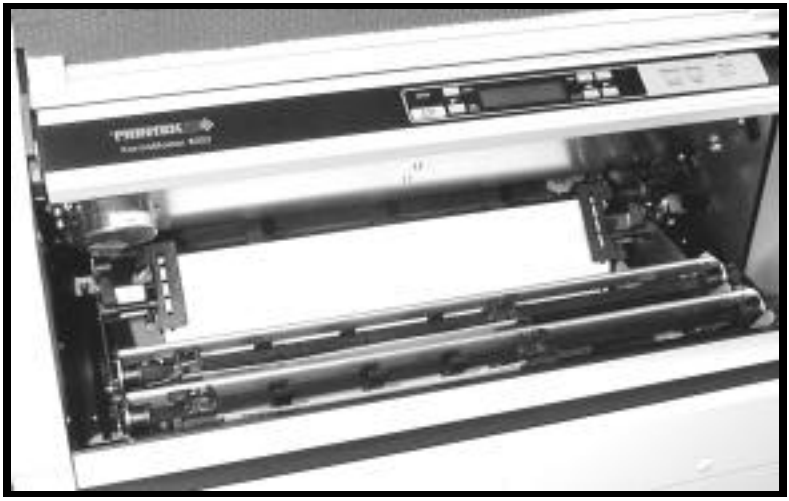


Paper positioned in left tractor.

9. Close the left tractor door.

10. Now position the paper in the right tractor in the same fashion. If necessary, the position of the right tractor may be adjusted. To do so, move the lever on the side of the tractor down to unlock the tractor and slide the tractor sideways on the shafts. If necessary, the paper guides between the tractors may be slid in either direction to accommodate the form width. Make sure that the guides are spaced evenly between the tractors.

    After the paper is placed in the tractor and the door is closed, position the tractor far enough to the right so that there is no buckle in the paper between the tractors, but not so tight that the holes in the paper are distorted. Lock the tractor in place by returning the lever to the up position.



New form loaded in tractors

Informing the Printer That the New Form is Loaded

11. Press the LOAD button. The display will now show that the new form has been "loaded".

12. If your printer is a FormsMaster 8003 you may repeat the above steps to load additional forms at this time.

13. Close the paper door.

14. Make sure the correct form to be positioned for printing is selected and press either the LOAD button or the ONLINE button. The LOAD button will position the form for printing but will not place the printer on line. The ONLINE button will both position the form and place the printer on line. Note that the first time the printer is placed on line after a new form is loaded, the form(s) currently known to be loaded by the printer will scroll across the display as the printer goes on line. The operator should observe the forms displayed to confirm that the correct forms are recognized as loaded.

EJECTING AND TEARING OFF A FORM

When most print jobs complete, they will command the paper to be positioned at the top of the next form so that the printer is ready for the next job. This is, however, dependent solely upon how the programmer chose to write your particular application software. If your software does position the paper at the top of the next form, the printer will automatically position the form at the tear bar as shown in the following picture.

Bottom of form at tear bar

If your form is positioned as shown, you may skip the next section on positioning and proceed with "Tearing off a Form".

Positioning the Form for Tear Off

1. If your print job has completed and the form is not positioned as shown above, take the printer off line by pressing the ONLINE button (indicator will change from green to flashing red).
2. Press the FORM FEED button. This will automatically position the form at the tear bar and you may tear off the form as described below.

Tearing off a Form

1. Make sure the printer is off line (indicator flashes red when off line) by pressing the ONLINE button if necessary. This will prevent the printer from pulling the paper down to start printing the next job while you are tearing off this one.
2. Pull the paper toward the front of the printer and toward one side of the printer as shown.

Tearing off a form

3. Place the printer back on line with the ONLINE button (indicator changes to green). The form will automatically be pulled down into position for printing the next time the printer receives data to be printed.

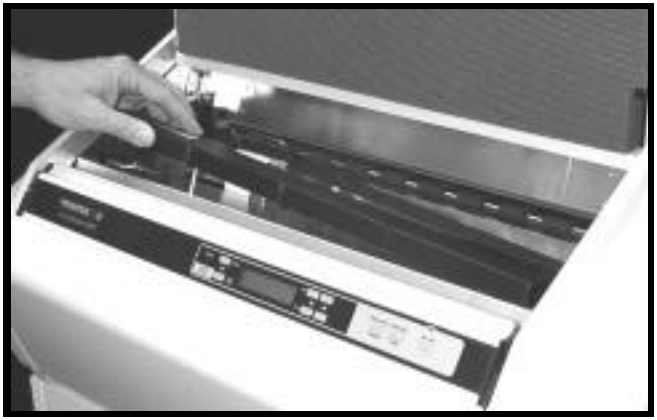
INSTALLING A NEW RIBBON CARTRIDGE

Removing the Old Ribbon Cartridge

1. Open the ribbon lid on top of the printer and position the print head for ribbon loading by lifting the ribbon loading handle as indicated in the following picture.

Opening the Ribbon Loading Handle

2. Grasp the left end of the ribbon cartridge and lift it up and toward the rear of the printer as shown below



Removing the Old Ribbon Cartridge

3. Lift the right end of the ribbon and remove the ribbon from the printer.

Installing the New Ribbon Cartridge.

Note: The use of Printek brand ribbons is recommended for increased ribbon life and print head life. The use of only Printek brand ribbons is required for the extended print head warranty. For details, see "Why Use Only Printek Brand Ribbons" in the "Getting Started" chapter.

4. Remove the new ribbon from its plastic bag and make sure the ribbon fabric is taut by turning the knob on top of the ribbon cartridge in a counterclockwise direction as indicated by the arrow on the cartridge.

5. Install the new ribbon by reversing the above removal process. For a more detailed installation description, see "Installing the Ribbon Cartridge" on page 8

6. Close the ribbon lid and place printer back on line.

ALIGNING PRINT

When a new form is loaded into the printer for the *first time*, it may be necessary to adjust where printing begins. This depends upon how the software that controls the printing was written. If the software was written to perform its own character and line spacing relative to the edges of the form, then adjustment may not be necessary. If the print position needs to be adjusted, the following discussion will describe how this is accomplished. Note that the alignment for the selected form is permanently stored in the printer's memory and does not have to be readjusted each time the form is loaded.

To align print on a particular form, select that form with the FORM SELECT button and then press the ALIGN PRINT button. If the form selected is named "Invoices", the display would now show the following.

Aligning Print
On INVOICES

After a short time, the display would change to show that you can now MOVE PRINT left or right. Be sure to remember that you are *moving where the print is placed on the page*.

MOVE Left/Right
PRINT ←0.00"→

The VALUE buttons will move the print left or right in 1/100th inch increments. Note that the left and right arrows will change according to which way the print has been moved from the normal print position. The maximum distance print may be moved is 9.99 inches in either direction.

To move the print vertically on the page, press either of the ITEM buttons and the display will change to the following.

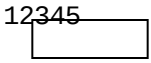
MOVE Down/Up
PRINT 0.00"↕

The VALUE buttons will move the print down or up in 1/100th inch increments. Note again that the arrow will change according to the direction

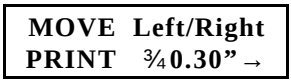
the print is to be moved from the normal print position. The maximum distance print may be moved is 9.99 inches in either direction.

Example

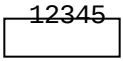
In this example, a number needs to be printed in a box on a preprinted form. This form could be a packing list, an invoice, or a check. The first time the page is printed, the number misses the box as shown below.



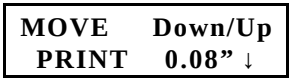
In this case, the *print* needs to be moved to the right and down. To accomplish this, press ALIGN PRINT and access the Left/Right option. First move the print to the right using the VALUE buttons. It appears that the text needs to move about three characters. If the text is being printed at 10 cpi (characters per inch), this would be 0.30 inches. After making this adjustment the display would look as follows.



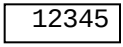
If you were to print this form now, it would appear as follows, showing that the print still needs to be moved down.



To move the print down, access the Down/Up option by pressing either of the ITEM buttons. It appears that the print needs to be moved down nearly the height of the characters. These characters are approximately 0.10 inches tall, so move the print down about 0.08 inches. The display should look as follows.



Now when the form is printed again, the text will be printed in the box as shown here.



COMMON ERROR CONDITIONS

Whenever the printer detects an error condition, it will automatically go off line. User correctable errors are "flashed" on the display. These errors can typically be recovered from without loss of data and are listed in this section of the manual.

Other errors which typically result in loss of data are considered fatal errors. These errors display the word ERROR on the top line of the display and do not flash. These errors are listed in the "Troubleshooting" section of this manual.

Check Paper

This error is caused either by running out of paper or by a paper jam. The printer will attempt to determine the cause of a paper problem and accompany the "Check Paper" message with "Paper Out", "Paper Jam", or "Paper Out/Jam".

It is not necessary to press the UNLOAD button. If your printer is a FormsMaster 8003, you may access the tractor path with the error by simply tilting any tractors in front of that path forward (see "Loading the Center Tractors" on page 16).

If the error is caused by a paper jam, remove the jammed form. If the form remaining in the tractors has tears along the top edge, remove it from the tractors, tear it off, and place the next form in the tractors.

If the error is caused by running out of paper, simply place a new box in the print stand and place the first form in the tractors.

Finally, place the printer back on line by pressing the ONLINE button. This will automatically load the new form and begin printing. Depending upon how the printer has been set up, the printer may start printing where it left off or it may start at the beginning of the page where the error occurred and reprint the entire page. See "Paper Out Fault Action" on page 80 for more information.

No Paper to Load

This error occurs when the LOAD button has been pressed and there is no paper or form in the tractors. Place paper in the tractors and press LOAD again.

Too Much Paper to Unload

This error occurs when the UNLOAD button has been pressed and there is paper present too far beyond the tear bar. This error serves as a warning that you may be putting forms that have already been printed on back into the printer. Tear off any printed forms past the tear bar and press UNLOAD again. This error also occurs if the LOAD button has been pressed and the current form cannot be unloaded.

Selected Form is not Loaded

This error occurs when ONLINE has been pressed and the currently selected form is displaying <Not Loaded>. Either press LOAD to load the selected form or select a different form and then press ONLINE.

No Ribbon or Wrong Ribbon

This error occurs when the printer is attempting to go on line and cannot detect the presence of a ribbon cartridge. This may be due to the ribbon not actually being present in the printer, or the ribbon may not be installed properly.

This error may also occur when attempting to use a non-Printek brand ribbon. Before attempting to use a ribbon brand other than Printek, please read "Why Use Only Printek® Brand Ribbons" on page 8. Then if you do decide to use non-Printek brand ribbons, refer to "Ribbon Checking" on page 81.

Ribbon Lid Open

This error occurs when ONLINE has been pressed and the ribbon lid has been left open. Close the lid and press ONLINE again.

Paper Door Open

This error occurs when ONLINE has been pressed and the paper door has been left open. Close the door and press ONLINE again.

Change Ribbon

This message is periodically displayed when a ribbon has reached the end of its useful life and indicates that a new Printek ribbon should be installed. This error is merely a reminder to change the ribbon and does not force the printer off line.

Other Errors

If other errors occur, it is possible that they may not be resolved without the aid of a factory trained service technician. Please refer to the "Maintenance and Troubleshooting" section on page 87.

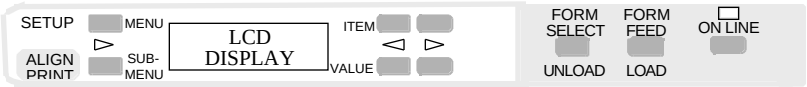
Printer Configuration

INTRODUCTION TO SETUP

The FormsMaster 8000 series printers feature simple, easy to use menus for setting the various operating parameters for the printer. The parameters available in these menus usually only need to be set one time, either when the printer is first installed or perhaps when a new form is to be used. These values are stored in nonvolatile memory, which means that they will remain set even if the printer is turned off. Following this introduction are complete, detailed descriptions of each menu item.

Setup Buttons

For your convenience, the SETUP button and the other buttons used while in the Setup mode are labeled in yellow on the control panel. Once in Setup, these buttons are the MENU, SUBMENU, ITEM, and VALUE buttons. The ONLINE indicator will flash yellow whenever the printer is in the Setup mode as a reminder to use the yellow labels. The buttons used for Setup are shown below.



Control Panel Setup Buttons

While in Setup, the placement of the text on the LCD display indicates which button or buttons to use to change what is displayed. In nearly all cases, you should use the button or buttons closest to the item you wish to change. To change what is on the top line, use the top buttons. To change what is on the bottom line, use the bottom buttons. To change what is on the left end of the line, use the left button. To use what is on the right end of the line, use the right buttons. Note also that the menu system works on

a "what you see is what you get" basis. This means that whatever value is last displayed for an item is the value that will be saved when Setup mode is exited.

Entering Setup

To enter Setup, simply take the printer off line and press the SETUP button. The ONLINE indicator will begin to flash yellow and the display will temporarily show the following.

Entering **Setup Menus**

After the above message has been shown, the display will change to the first menu available, which is the FORMS MENU as shown below. In this case the display will also show the first submenu which will be the form that was selected when Setup was pressed.

FORMS MENU **Form 0**

Using the MENU Button

At this time you may select a different menu by pressing the MENU button (closest to where FORMS MENU is displayed). Other menus available are the INTERFACE MENU, the OPTIONS MENU, and the TEST MENU. This button will also display an option for exiting Setup. If you do not wish to exit Setup at this time, press the button indicated for No and continue to press the MENU button to select the desired menu. The MENU button may be pressed at any time to select a different menu.

Using the SUBMENU Button

The SUBMENU button selects additional menus that are related to the selected menu. For instance, if the FORMS MENU has been selected, the SUBMENU button (closest to where the form number is displayed) will select which form (Form 0 through Form 9) is to be set up. Note that not all

menus have submenus. If no submenu is available, the bottom line will be blank and the SUBMENU button will not be used.

Using the ITEM and VALUE Buttons

Once the correct menu and submenu (if available) is selected, pressing either of the ITEM buttons will cause the various items and their current values to be displayed. Note that the items and their values are right justified and are thus controlled by the buttons to the right of the display. To scroll through the items available, use the ITEM buttons. To change the value of the displayed item, use the VALUE buttons to step through the possible choices. Remember to leave the correct value displayed before selecting a different item or menu, since "what you see is what you get" when Setup Mode is exited.

Exiting Setup

Two methods of exiting Setup are available. If you wish to exit Setup and remain off line, press the MENU button to display the following option.

```
←No   Exit Setup
←Yes    Menus?
```

Pressing the button indicated for No will allow you to make additional menu choices. Pressing the button indicated for Yes will display one of the following messages depending on whether or not changes were made, reset the printer if changes were made, and then leave the printer off line.

```
Exiting Menus
Saving Changes
```

```
Exiting Menus
No Changes
```

To exit Setup Mode and automatically go on line, press ONLINE. The display will now show one of the above messages, if changes were made, and automatically go on line.

FORMS MENU

Most form printing applications use several different forms such as packing lists, bills of lading, invoices, checks, and green bar paper for reports. Not all of these forms require the same printer settings for things such as font, character size, line spacing, or form length. The FormsMaster 8000 series printers store up to ten complete sets of form parameters including the name of the form. These ten sets of parameters, or "forms", are permanently stored in the printer's memory and are referred to as "Form 0" through "Form 9". These forms can be accessed from a single button on the printer's control panel or by a command sent from the host computer.

To access the FORMS MENU, enter Setup by pressing the SETUP button. After the "Entering Setup Menus" message has been displayed, the following will appear.

FORMS MENU **Form 0**

Note that the actual form number will be for the form that was active prior to entering Setup. To select a different form, press the SUBMENU button until the desired form is displayed. Next press either of the ITEM buttons to begin displaying the various items for that form. The items available for each form are described on the following pages. The factory default values are indicated with an asterisk (*) in this manual (the asterisk does not appear on the printer's display).

Forms Menu Items

Form Name

Form Name
FORM 0

Possible Values: Up to 16 characters of A through Z, Space, 0 through 9

When shipped from the factory, the Form Names will be set to "FORM 0" through "FORM 9". This name may be changed to any combination of capital letters (A-Z), numerals (0-9), or spaces. The name may be up to 16 characters in length.

Entering a name uses the SUBMENU and VALUE buttons. The SUBMENU button will advance the cursor, a flashing block, which is used to indicate the character that is to be changed. The VALUE buttons will change the character where the cursor is currently flashing. The order of characters that may be selected is "ABCDEFGHIJKLMNOPQRSTUVWXYZ, Space, 0123456789". Even though the name will be right justified while being entered, it will be automatically centered on the display when not in Setup Mode, so there is no need to try to center it with spaces.

Tractor Path

Tractor Path
Front

Possible Values: Front, Center, Rear
Center+Rear, Frnt+Cntr+Rear

This item is only available in the FormsMaster 8003 and is used to set the tractor path to be used for the currently selected form. Typically, most forms are only loaded in one tractor path and the value will be set to Front, Center, or Rear.

However, a form can also be set to use multiple paths. This may be desirable when printing long print jobs where a paper out condition needs to be avoided. This is often true if the job is to be run overnight or at a remote and perhaps unattended location. When a form's tractor path is set to Center+Rear or Frnt+Cntr+Rear, the printer will automatically switch to the

next path, or paths, and continue printing until all the specified paths are empty

Automatic Cut

Automatic Cut
No

Possible Values: No*, Yes

This item is only available when the optional FormsCutter is installed in the printer. When set to Yes, the printer will automatically cut each form at the perforation (based upon the Form Length setting) and eject the form into the paper basket that is installed with the FormsCutter. If set to No, the paper will exit through the lower, continuous paper path into the basket on the print stand. To manually cut a form or report at the end of the current page, the user can take the printer offline and press the UNLOAD button. See the *FormsMaster 8000 Series FormsCutter Manual* for additional information.

Cut Adjustment

Cut Adjustment
0

Possible Values: Auto, -0.2951" … 0* … +0.2951", Auto

This item may be used to adjust the position of the cut relative to the top-of-form for improved cut accuracy. This item is only available when the optional FormsCutter is installed. Refer to the FormsCutter manual for more information.

Lines Per Inch

Lines/Inch
6

Possible Values: 6*, 8

This item sets the line pitch to 6 or 8 Lines Per Inch (LPI).

Form Length

Form Length 66 Lines

Possible Values: 1 … 66* … 227 Lines

This item sets the form length in lines at the current line pitch (LPI). For example: for an eleven inch form, enter 66 if you are using six lines per inch or 88 if you are using eight lines per inch.

Top Margin

Top Margin 0 Lines

Possible Values: 0* … 226 Lines

This item sets the top margin in lines. Setting a top margin will reduce the size of the printable area of the page by the number of lines set. Printing will not be allowed above the top margin.

Note: In most cases changing where printing begins on a form should be accomplished with ALIGN PRINT rather than with a top margin. Adding a top margin may cause some programs to print the first form correctly and then print following forms too far down the page if the program sending the data does not require the margin.

Bottom Margin

Bottom Margin 0 Lines

Possible Values: 0* … 226 Lines

This item sets the bottom margin in lines. Setting a bottom margin will reduce the size of the printable area of the page by the number of lines set. When the bottom margin is reached, the remainder of the page will be skipped and printing will resume at the beginning of the next page (or top margin if one is set). Adding a bottom margin may cause some data to be printed on the wrong page if the program sending the data does not require the margin.

Characters Per Inch

Characters/Inch
10

Possible Values: 10*, 12, 13.3, 15, 16.74, 17.14, 20

This item sets the default character pitch in Characters Per Inch (CPI). (Note that OCR-A and OCR-B characters are only valid at 10 CPI will always print at 10 CPI regardless of this setting.)

Left Margin

Left Margin
Column 0

Possible Values: Column 0* … 268

This item sets the left margin in columns (characters) relative to the left edge of the paper. The column width is based upon the current character pitch (CPI). The left margin must be less than the right margin. The left margin may be used to cause printing to begin farther to the right on a form. In many cases using ALIGN PRINT may be preferable to using a left margin (see Aligning Print on page 34) .

Right Margin

Right Margin
Column 272

Possible Values: Column 4 … 272*

This item sets the right margin in columns (characters) relative to the left edge of the paper. A value of 272 is large enough to insure that characters can be printed to the right end of the paper regardless of character pitch (CPI). The right margin must be greater than the left margin. Text characters that would have printed to the right of the margin will be "wrapped around" and printed at the beginning of the next line. Graphic data that would have printed to the right of the margin will be truncated (not wrapped around). However, any data which would print before the right margin but beyond the edge of the paper (either in the sprocket holes or on the platen) will be truncated.

Font

Font
Epson FX FD

Possible Values: Epson FX FD*, DF, LQ;
PC English FD, DF, LQ;
PC Latin 2 FD, DF, LQ;
DEC LA120 FD, DF, LQ;
EBCDIC FD, DF, LQ;
OCR-A OQ;
OCR-B OQ

This item selects the default font to be used.

Draft Speed

Draft Speed
Normal

Possible Values: Normal*, Fast

This item selects whether the Draft Font (DF) or the Fast Draft (FD) font will be selected when the printer receives a "select draft font" command from the host computer. This will allow the Fast Draft font to be used with programs which would not be able to otherwise.

Impact Force

Impact Force
Normal

Possible Values: Normal*, High

This item may be used to select High Impact for improved printing on multipart forms that do not otherwise print well on the back copies.

Language

Language
USA

Possible Values: USA*, France, Germany, England, Denmark, Sweden, Italy, Spain, Japan, Finland

This item selects the character substitution table to be used for an alternate language when printing. The Epson font must be selected in order for this

feature to work properly. The character substitutions are shown in the following table.

Char Value	35	36	64	91	92	93	94	96	123	124	125	126
USA	#	$	@	[	\	]	^	`	{	_	}	~
France	#	$	à	°	ç	§	^	`	é	ù	è	¨
Germany	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	ß
England	£	$	@	[	\	]	^	`	{	_	}	~
Denmark	#	$	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	$	@	°	\	é	^	ù	à	ò	è	ì
Spain	PTS	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	@	[	¥	]	^	`	{	_	}	~

Zero Style

Zero
Normal

Possible Values: Normal*, Slashed

This item selects whether the numeral zero is printed with or without a slash through it. (This is true for normal text characters. The optional Imager and ImagerPlus Coprocessors have a separate setup item for zero characters they generate.)

Unidirectional Printing

Unidirectional
No

Possible Values: No*, Yes

This item selects unidirectional printing instead of bidirectional printing.

This may be used to improve the straightness of vertical lines for critical applications such as printing small bar codes.

INTERFACE MENU

The Interface Menu may contain several submenus. These submenus are for setting up items pertaining to the hardware interfaces such as the serial and parallel ports as well as the optional character processing interfaces such as the Imager and ImagerPlus.

In addition to the standard parallel interface and the RS-232C serial interface which are furnished with the printer, one more hardware interface such as Coax/Twinax, IPDS Coax, IPDS Twinax, or 10BaseT LAN may also be installed, as well as an Imager or ImagerPlus graphic option. The Setup items for each interface are described in one of the following sections.

The printer will automatically receive data from any of the hardware interfaces, or ports, as described below in "Automatic Port Switching".

RS-232C Serial Interface on page 51
Parallel Interface on page 55
Etherlink 10BaseT Interface on page 57
Coax Interface on page 59
Twinax Interface on page 63
IPDS Coax Interface on page 67
IPDS Twinax Interface on page 72
Imager and ImagerPlus Interface on page 74

Automatic Port Switching

The FormsMaster 8000 series printers will automatically accept data from the Parallel Interface, the RS-232 Serial Interface, *and* any optionally installed hardware interface. This feature is always active and does not require user intervention to change ports.

In most installations, the printer is only connected to one computer and this feature may be ignored. If this is true of your installation, you may skip this section and proceed with one of the following sections which applies to the interface port you will be using.

In other installations the printer may be attached to two or three computers. This section describes how the printer will automatically switch control of the printer from one hardware interface port to another.

Note that since any one of these ports can become active at any time, items which pertain to each port need to be set up as described in the following sections. Ports that will not be used (not installed or not connected to a computer) do not need to be set up.

When the first data are received at any port after turning on power to the printer, that port becomes the "active" port. While one of the ports is active, each of the other ports will accept only a limited number of characters before reflecting a "busy" condition to the computer attached to those ports.

To change which port is active, the printer's buffer must be empty for at least 15 seconds *and* data must be received from a different port. Therefore, if data are never received from more than one port, that port is always the active port.

When which port is active changes, the printer will automatically perform a Carriage Return (CR) and reselect the emulation that was in effect for that port. The printer will also perform a Form Feed (FF) if not already at the top of form.

Entering the Interface Menu

To Enter the Interface Menu, enter Setup and press the MENU button until INTERFACE MENU is displayed on the top line as shown below.

INTERFACE MENU
Serial

The SUBMENU options for the INTERFACE MENU always include the Serial and Parallel ports. The other ports mentioned earlier will only be displayed if they are installed in the printer. This is also true of the Imager or ImagerPlus graphics options. To select the desired interface, press the SUBMENU button until that interface is displayed on the bottom line. Next press either of the ITEM buttons to begin displaying the items associated with that interface. Each interface and the items which pertain to that interface are listed on the following pages. Note that many items are the

same for more than one interface since the computer attached to that interface may have different requirements for each of those items.

The factory default values are indicated with an asterisk (*) in this manual (the asterisk does not appear on the printer's display).

RS-232C Serial Interface Items

INTERFACE MENU
Serial

Emulation

Emulation
Epson

Possible Values: Epson*, IBM Proprinter, DEC LA120, TTY, Printek, ANSI X3.64

This item selects the emulation to be used whenever the serial port is active (see "Automatic Port Switching" earlier in this section). Emulation should be set to match the type of printer your software supports.

Automatic Carriage Return

Auto CR
On

Possible Values: Off, On*

This item enables or disables automatic Carriage Returns (CR) whenever a Line Feed (LF), Vertical Tab (VT), or Form Feed (FF) is received.

Automatic Line Feed

Auto LF

Off

Possible Values: Off*, On

This item enables or disables automatic Line Feeds (LF) when a Carriage Return (CR) is received.

Perform Host Form Feed at Top-of-Form

Host FF at TOF
No

Possible Values: No*, Yes

This item selects whether Form Feeds (FF) will be performed when received from the host computer if the paper is already positioned at the top of form (TOF). Setting this item to No will help prevent blank pages.

Characters

Characters
Control

Possible Values: Control*, Printable

This item selects whether certain control character symbols will be printed or be treated as control characters. The effect of this is dependent upon the Emulation selected.

Minimum Buffer

Minimum Buffer
No

Possible Values: No*, Yes

This item selects whether the smallest possible I/O buffer should be used. Setting this item to No will allow the printer to make maximum use of the I/O buffer (see "Paper Out Fault" on page 80 for more information on buffer size). Setting this to Yes may decrease performance, but is useful when using the printer with operating systems that try to keep track of which page is currently being printed by the printer. This may also be useful when using serial I/O with systems that do not respond quickly enough to handshake signals.

Baud Rate

Baud Rate
9600

Possible Values: 110, 150, 300, 600, 1200, 2400, 4800, 9600*, 19200

This item selects the baud rate for the serial interface. This must be set to match the baud rate setting on the host computer.

Data Bits

Data Bits
8

Possible Values: 8*, 7

This item selects the number of data bits in the serial character frame. This must be set to match the character size setting on the host computer.

Stop Bits

Stop Bits
1

Possible Values: 1*, 2

This item sets the number of stop bits to be used at the end of the serial character frame. This must be set to match the stop bit setting on the host computer.

Parity

Parity
None

Possible Values: None*, Even, Odd

This item Selects the parity checking requirements for the serial data bits. This must be set to match the parity setting on the host computer.

Busy Signal Polarity

Busy Polarity

Low

Possible Values: Low*, High

This item selects the polarity of the busy signal (pin 11 of the RS-232C interface). Busy is set whenever the printer is offline, the serial input buffer is full, or another interface port is currently active (see "Automatic Port Switching" earlier in this section).

Data Terminal Ready

DTR
Power On/Off

Possible Values: Power On/Off*
Online/Offline
Busy/Not Busy

Selects the condition to be reflected by the DTR signal (pin 20 of the RS-232C interface). In most cases, especially those involving a MODEM, this signal should be set to indicate Power On/Off. Selecting Online/Offline will reflect only the condition indicated and does not reflect a buffer full condition. Busy/Not Busy will cause DTR to indicate both the online/offline status and buffer full condition (see "Busy Polarity" above).

XON/XOFF Handshaking

XON/XOFF
Off

Possible Values: Off*, On

Enables or disables the transmission of the XON and XOFF characters from the printer to the host to control data flow to the printer. XOFF will be sent whenever the printer goes offline or the serial buffer is full. XON will be sent when is again ready to receive characters.

ETX/ACK Handshaking

ETX/ACK
Off

Possible Values: Off*, On

Enables or disables the ACK response to receipt of the ETX character. This handshake method is useful for conditions where there are long transmission line delays such as telephone lines which may be routed through satellites. An ACK character will be returned to the host computer after an ETX character is received and processed. ETX characters used for handshaking cannot be part of an escape sequence.

Parallel Interface Items

INTERFACE MENU
Parallel

Emulation

Emulation
Epson

Possible Values: Epson*, IBM Proprinter,
DEC LA120, TTY,
Printek, ANSI X3.64

This item selects the emulation to be used whenever the parallel port is active (see "Automatic Port Switching" earlier in this section). The emulation should be set to match the type of printer your software supports.

Automatic Carriage Return

Auto CR
On

Possible Values: Off, On*

This item enables or disables automatic Carriage Returns (CR) whenever a Line Feed (LF), Vertical Tab (VT), or Form Feed (FF) is received.

Automatic Line Feed

Possible Values: Off*, On

This item enables or disables automatic Line Feeds (LF) when a Carriage Return (CR) is received.

Perform Host Form Feed at Top-of-Form

Possible Values: No*, Yes

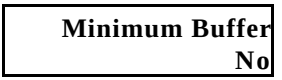
This item selects whether Form Feeds (FF) will be performed when received from the host computer if the paper is already positioned at the top of form (TOF). Setting this item to No will help prevent blank pages.

Characters

Possible Values: Control*, Printable

This item selects whether certain control character symbols will be printed or be treated as control characters. The effect of this is dependent upon the emulation selected above.

Minimum Buffer



Possible Values: No*, Yes

This item selects whether the minimum I/O buffer size should be used. Setting this item to No will allow the printer to make maximum use of the I/O buffer (see "Paper Out Fault" on page 80 for more information on buffer size). Setting this to Yes may decrease performance, but is useful when using the printer with operating systems that try to keep track of which page is currently being printed by the printer.

Ethernet 10BaseT LAN Interface Items

INTERFACE MENU
LAN

Emulation

Emulation
Epson

Possible Values: Epson*, Basic Bar Codes, IBM Proprinter, DEC LA120, TTY, Printek, ANSI X3.64

This item selects the emulation to be used whenever the LAN port is active (see "Automatic Port Switching" earlier in this section). The emulation should be set to match the type of printer your software supports.

Automatic Carriage Return

Auto CR
On

Possible Values: Off, On*

This item enables or disables automatic Carriage Returns (CR) whenever a Line Feed (LF), Vertical Tab (VT), or Form Feed (FF) is received.

Automatic Line Feed

Possible Values: Off*, On

This item enables or disables automatic Line Feeds (LF) when a Carriage Return (CR) is received.

Perform Host Form Feed at Top-of-Form

Possible Values: No*, Yes

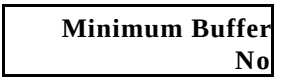
This item selects whether Form Feeds (FF) will be performed when received from the host computer if the paper is already positioned at the top of form (TOF). Setting this item to No will help prevent blank pages.

Characters

Possible Values: Control*, Printable

This item selects whether certain control character symbols will be printed or be treated as control characters. The effect of this is dependent upon the emulation selected above.

Minimum Buffer



Possible Values: No*, Yes

This item selects whether the minimum I/O buffer size should be used. Setting this item to No will allow the printer to make maximum use of the I/O buffer (see "Paper Out Fault" on page 80 for more information on buffer size). Setting this to Yes may decrease performance, but is useful when using the printer with operating systems that try to keep track of which page is currently being printed by the printer.

Coax/Twinax Interface Items When Configured for Coax Operation

INTERFACE MENU
Coax

When the optional Coax/Twinax Interface is installed, the printer will automatically determine which of these two interfaces are being used by sensing which adapter cable is attached to the printer at power on. If the Coax adapter is attached, the following Setup items will be displayed. If you are using the printer in a Twinax Configuration, refer to the next section of this chapter.

Printer Emulation

PrinterEmulation
3287

Possible Values: 3287*, 3262

This item selects the IBM printer model to be emulated.

Maximum Print Position

Max Print Pos
132

Possible Values: 132*, None

This item selects whether the maximum print position is column 132 or if no maximum position is enforced.

Maximum Print Line

Max Print Line
66

Possible Values: 66*, None

This item selects whether the maximum print line is line 66 or if no maximum position is enforced.

Form Feed After Local Copy

FF on Local Copy
Enable

Possible Values: Enable*, Disable

This item selects whether a form feed will automatically be performed after a local copy operation.

Form Feed Validity (LU-3)

FF Valid (LU-3)
Anywhere

Possible Values: Anywhere*, Col 1 or MPP+1

This item selects whether a Form Feed character will cause a form feed to occur when received anywhere in the data stream or only when received at column 1 or at MPP+1.

Form Feed At EOM (LU-3)

FF at EOM (LU-3)
Disable

Possible Values: Enable, Disable*

This item selects whether a form feed will automatically be performed after an End Of Message is received.

Paper Error Reporting

Paper Err Report
Disable

Possible Values: Enable, Disable*

This item selects whether paper errors will be reported to the host.

Default Character Set

Character Set
Multinational

Possible Values:

Multinational*	France
USA	Italy
Austria/Germany	Japan (English)
Belgium	Japan (Katakana)
Brazil	Portuguese
Canadian French	Spain
Denmark/Norway	Spanish Speaking
Finland/Sweden	United Kingdom

This item selects the default character translation.

Logical Not Character

Logical Not Char
5E Hex

Possible Values: 5E Hex (caret ^), E1 Hex (not symbol ¬)

This item selects which character is actually printed when a logical not character is received (Shift-6 on most keyboards).

Null Suppression (LU-3)

NUL Supp (LU-3)
Disable (NUL=SP)

Possible Values: Disable (NUL=SP)*, Enable

This item selects whether NUL characters will suppressed or converted to spaces.

Host Character Pitch Control

Host CPI Control
Enable

Possible Values: Enable*, Disable

This item selects whether the host is able to control the character pitch (Characters Per Inch) or if it is controlled only by the printer Setup menus.

Host Line Pitch Control

Host LPI Control
Enable

Possible Values: Enable*, Disable

This item selects whether the host is able to control the line pitch (Lines Per Inch) or if it is controlled only by the printer Setup menus.

Host Form Length Control

Host Form Length
Enable

Possible Values: Enable*, Disable

This item selects whether the host is able to control the form length or if it is controlled only by the printer Setup menus.

Buffer Size

Buffer Size
4K

Possible Values: 4K*, 2K

This item selects the input buffer size.

Display Screen Size

Display Size
1920

Possible Values: 1920*, 2560, 3440, 3564, 920

This item selects the display screen size.

Test Mode

Test Mode
Off

Possible Values: Off*, EBCDIC Code Dump, Loopback

This item selects the test mode within the CX/TX interface. When set to Off, the printer will operate normally. When set to EBCDIC Code Dump, the printer will print the EBCDIC value of the characters received to assist programmers in software debugging (for more information refer to the *FormsMaster 8000 Series Programmer's Manual*). When set to Loopback, the interface will perform internal diagnostics and print the result.

Reserved Parameter

(new)Parameter19
(unused)0

Possible Values: (unused)0*, 1 - 255

This item is reserved for future use.

Coax/Twinax Interface Items When Configured for Twinax Operation

INTERFACE MENU
Twinax

When the optional Coax/Twinax Interface is installed, the printer will automatically determine which of these two interfaces are being used by sensing which adapter cable is attached to the printer at power on. If the Twinax Smart-T adapter is attached, the following Setup items will be displayed. If you are using the printer in a Coax Configuration, refer to the previous section of this chapter.

Note: The Twinax Address is selected by using the rotary switch on the back of the printer next to the 15 pin "D" connector where the twinax Smart-T adapter is connected.

Printer Emulation

PrinterEmulation
4214

Possible Values: 4214*, 5225, 5256, 4234

This item selects the IBM printer model to be emulated.

Default Character Set

Character Set
Multinational

Possible Values:

Multinational*	France
USA	Italy

Austria/Germany	Japan (English)
Belgium	Japan (Katakana)
Brazil	Portuguese
Canadian French	Spain
Denmark/Norway	Spanish Speaking
Finland/Sweden	United Kingdom

This item selects the default character translation.

Logical Not Character

Logical Not Char
5E Hex

Possible Values: 5E Hex (caret ^), E1 Hex (not symbol ¬)

This item selects which character is actually printed when a logical not character is received (Shift-6 on most keyboards).

Host Print Quality Control

Host Print Qual
Enable

Possible Values: Enable*, Disable

This item selects whether the host is able to control the print quality (draft or letter quality) or if it is controlled only by the printer Setup menus.

Host Character Pitch Control

Host CPI Control
Enable

Possible Values: Enable*, Disable

This item selects whether the host is able to control the character pitch (Characters Per Inch) or if it is controlled only by the printer Setup menus.

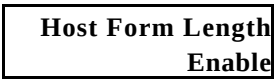
Host Line Pitch Control

Host LPI Control
Enable

Possible Values: Enable*, Disable

This item selects whether the host is able to control the line pitch (Lines Per Inch) or if it is controlled only by the printer Setup menus.

Host Form Length Control



Possible Values: Enable*, Disable

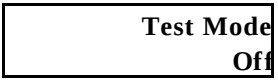
This item selects whether the host is able to control the form length or if it is controlled only by the printer Setup menus.

Host Bin Select

Possible Values: Enable*, Disable

This item selects whether the host is able to change bin (form) selections or if it is controlled only by the printer control panel.

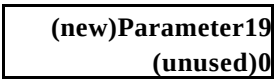
Test Mode



Possible Values: Off*, EBCDIC Code Dump, Loopback

This item selects the test mode within the CX/TX interface. When set to Off, the printer will operate normally. When set to EBCDIC Code Dump, the printer will print the EBCDIC value of the characters received to assist programmers in software debugging (for more information refer to the *FormsMaster 8000 Series Programmer's Manual*). When set to Loopback, the interface will perform internal diagnostics and print the result.

Reserved Parameter



Possible Values: (unused)0*, 1 - 255

This item is reserved for future use.

IPDS Coax Interface Items

INTERFACE MENU
IPDS Coax

Maximum Print Position

Max Print Pos
132

Possible Values: 132*, None

This item selects whether the maximum print position is column 132 or if no maximum position is enforced.

Carriage Return Received at MPP+1

CR at MPP+1
CR

Possible Values: CR*, NL

This item selects whether a Carriage Return received at MPP+1 will cause only a Carriage Return or a New Line (Carriage Return and Line Feed) to be performed.

New Line Received at MPP+1

NL at MPP+1
NL

Possible Values: NL*, 2 x NL

This item selects whether a New Line received at MPP+1 will cause one or two New Lines to be performed.

Maximum Print Line

Max Print Line
66

Possible Values: 66*, None

This item selects whether the maximum print line is line 66 or if no maximum position is enforced.

Form Feed After Local Copy

FF on Local Copy
Enable

Possible Values: Enable*, Disable

This item selects whether a form feed will automatically be performed after a local copy operation.

Form Feed Validity (LU-3)

FF Valid (LU-3)
Anywhere

Possible Values: Anywhere*, Col 1 or MPP+1

This item selects whether a Form Feed character will cause a form feed to occur when received anywhere in the data stream or only when received at column 1 or at MPP+1.

Form Feed At EOM (LU-3)

FF at EOM (LU-3)
Enable

Possible Values: Enable, Disable*

This item selects whether a form feed will automatically be performed after an End Of Message is received.

Form Feed Operation

FF Operation
FF

Possible Values: FF, FF + Space*

This item selects whether only a Form Feed or a Form Feed and a Space will be performed when a Form Feed character is received.

Paper Error Reporting

Paper Err Report
Disable

Possible Values: Enable, Disable*

This item selects whether paper errors will be reported to the host.

Default Character Set

Character Set
Multinational

Possible Values:

Multinational*	France
USA	Italy
Austria/Germany	Japan (English)
Belgium	Japan (Katakana)
Brazil	Portuguese
Canadian French	Spain
Denmark/Norway	Spanish Speaking
Finland/Sweden	United Kingdom

This item selects the default character translation.

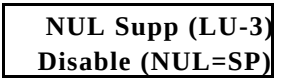
Logical Not Character

Logical Not Char
5E Hex

Possible Values: 5E Hex (caret ^), E1 Hex (not symbol ¬)

This item selects which character is actually printed when a logical not character is received (Shift-6 on most keyboards).

Null Suppression (LU-3)



Possible Values: Disable (NUL=SP)*, Enable

This item selects whether NUL characters will suppressed or converted to spaces.

Host Impact Control

Possible Values: Enable*, Disable

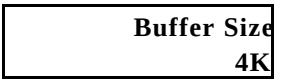
This item selects whether the host is able to control the normal or high impact setting or if it is controlled only by the printer Setup menus.

Host Bin Select

Possible Values: Enable*, Disable

This item selects whether the host is able to change bin (form) selections or if it is controlled only by the printer control panel.

Buffer Size



Possible Values: 4K*, 2K

This item selects the input buffer size.

Display Screen Size

Display Size
1920

Possible Values: 1920*, 2560, 3440, 3564, 920

This item selects the display screen size.

Test Mode

Test Mode
Off

Possible Values: Off*, EBCDIC Code Dump, Loopback

This item selects the test mode within the CX/TX interface. When set to Off, the printer will operate normally. When set to EBCDIC Code Dump, the printer will print the EBCDIC value of the characters received to assist programmers in software debugging (for more information refer to the *FormsMaster 8000 Series Programmer's Manual*). When set to Loopback, the interface will perform internal diagnostics and print the result.

Reserved Parameter

(new)Parameter17
(unused)0

Possible Values: (unused)0*, 1 - 255

This item is reserved for future use.

IPDS Twinax Interface Items

Note: The Twinax Address is selected by using the rotary switch on the back of the printer next to the 15 pin "D" connector where the twinax Smart-T adapter is connected.

INTERFACE MENU
IPDS Twinax

Default Character Set

Character Set
Multinational

Possible Values:

Multinational*	France
USA	Italy
Austria/Germany	Japan (English)
Belgium	Japan (Katakana)
Brazil	Portuguese
Canadian French	Spain
Denmark/Norway	Spanish Speaking
Finland/Sweden	United Kingdom

This item selects the default character translation.

Host Impact Control

Host Impact Ctrl
Enable

Possible Values: Enable*, Disable

This item selects whether the host is able to control the normal or high impact setting or if it is controlled only by the printer Setup menus.

Host Bin Select

Host Bin Select
Enable

Possible Values: Enable*, Disable

This item selects whether the host is able to change bin (form) selections or if it is controlled only by the printer control panel.

Test Mode

Test Mode
Off

Possible Values: Off*, EBCDIC Code Dump, Loopback

This item selects the test mode within the CX/TX interface. When set to Off, the printer will operate normally. When set to EBCDIC Code Dump, the printer will print the EBCDIC value of the characters received to assist programmers in software debugging (for more information refer to the *FormsMaster 8000 Series Programmer's Manual*). When set to Loopback, the interface will perform internal diagnostics and print the result.

Reserved Parameter

(new)Parameter4
(unused)0

Possible Values: (unused)0*, 1 - 255

This item is reserved for future use.

Imager and ImagerPlus Interface Items

INTERFACE MENU
Imager

or

INTERFACE MENU
ImagerPlus

The printer will automatically display Imager or ImagerPlus as shown above based upon which interface is installed. The descriptions in this manual are brief. For more information, please refer to the appropriate Imager or ImagerPlus manual.

Emulation

Emulation
QMS CodeV v2

Possible Values: QMS CodeV v2*, PTX CodeV v2,
Printronix IGP

This item sets the Imager or ImagerPlus emulation mode. QMS CodeV v2 selects QMS Code V version 2, PTX CodeV v2 selects Printronix Code V version 2. Note that Printronix IGP is only available in the ImagerPlus.

Control Character

ControlCharacter
^ (5E Hex)

Possible Values: ^ (5E Hex)*
SOH (01 Hex) through HT (09 Hex),
SO (0E Hex) through (FF Hex)

This item sets the control character used to begin commands. The character normally used for QMS is the caret (^) and the character nomally used for IGP is the tilde (~) (if you change the emulation to Printronix IGP, you may need to change the control characcter to the tilde).

Line Terminator

Line Terminator
LF

Possible Values: LF*, CR

This item sets the line terminating character to a Line Feed or a Carriage Return.

Bar Code Density

Bar Code Density
High-Res

Possible Values: Low-Res, Medium-Res, High-Res*, Graphics Med-Res

This item sets the density, or graphics resolution, for bar codes.

QMS Character Set
(QMS CodeV v2 and PTX CodeV v2 only)

QMS Char Set
USA

Possible Values:

USA	France
United Kingdom	Italy
Sweden/Finland	Spain
Norway/Denmark	PC Subset
Japan	CodeV Version1
Germany	

This item selects the character set.

^PY Translation Mode
(QMS CodeV v2 and PTX CodeV v2 only)

^PY Translation
Not Active

Possible Values: Not Active*, Active

This item selects whether or not Filter Mode is active at power on or reset.

^F Free Format Mode
(QMS CodeV v2 and PTX CodeV v2 only)

^F Free Format
Not Active

Possible Values: Not Active*, Active

This item selects whether or not the Free Format Mode is active in Filter Mode.

^ X Ignore Data Mode
(QMS CodeV v2 and PTX CodeV v2 only)

^X Ignore Data
Not Active

Possible Values: Not Active*, Active

This item selects whether data will be ignored until a ^A is received.

Imager/ImagerPlus Zero Style
(QMS CodeV v2 and PTX CodeV v2 only)

Imager Zero
Slashed

Possible Values: Slashed*, Normal

This item selects the type of zero character (Ø or O) to be printed by the Imager or ImagerPlus.

Line Registration
(QMS CodeV v2 and PTX CodeV v2 only)

LineRegistration
Not Maintained

Possible Values: Not Maintained*, Maintained

This item selects whether or not the form will automatically be advanced to the next line boundary when Filter Mode is exited.

Vertical DPI Resolution
(QMS CodeV v2 and PTX CodeV v2 only)

Vertical DPI
72

Possible Values: 72*, 70

This item sets the vertical resolution to 72 or 70 Dots Per Inch.

Vertical Text Spacing
(QMS CodeV v2 and PTX CodeV v2 only)

Vertical Text SP
Version 2

Possible Values: Version 2*, Version 1

This item selects whether text should be spaced vertically as in Code V version 1 or version 2.

Code V Space Fields
(QMS CodeV v2 and PTX CodeV v2 only)

CodeV SP Fields
Process

Possible Values: Process*, Ignore

This item selects whether Code V space fields should be processed.

IGP Character Set
(Printronix IGP only)

IGP Char Set
ASCII

Possible Values:

ASCII	English
Germany	Dutch
Sweden	France
Denmark	Spain
Norway	Italy
Finland	Turkey

This item selects the character set.

Delete Logos
(Printronix IGP only)

Delete Logos
No

Possible Values: No*, Yes

This item selects whether logos should be deleted when a form is deleted.

Quiet Mode
(Printronix IGP only)

Quiet Mode
Not Active

Possible Values: Not Active*, Active

This item selects whether or not the quiet mode is active at power on.

Spacing Mode
(Printronix IGP only)

Spacing
IGP 10/20/40

Possible Values: IGP 10/20/40*, IGP 30

This item selects the Spacing mode.

OPTIONS MENU

The OPTIONS MENU contains items which do not pertain only to a specific form or specific interface, but rather affect how the printer works under all conditions. To access the options menu, enter Setup and then press MENU until OPTIONS MENU is displayed

OPTIONS MENU

Note that the options menu has no submenus. Therefore, press either of the ITEM buttons to begin displaying the items available. The factory default values are indicated with an asterisk (*) in this manual (the asterisk does not appear on the printer's display).

Maximum Form Allowed

Max Form Allowed **Form 2**

Possible Values: Form 0 … Form 2* … Form 9

This item sets the last form number to be displayed for operator selection with the FORM SELECT button or while in the FORMS MENU. This allows the operator to see only the forms that are in use rather than having to sort through several unused forms.

Note that when setting this value that you may not select a value less than the form currently selected when Setup was entered, or less than the form currently selected in the "Setup: FORMS" menu.

Automatic Scroll Delay

Auto-Scroll **1 Second Delay**

Possible Values: Off, 1* to 15 Second Delay

This item sets the number of seconds to delay before scrolling the top of form to the tear bar when the printer is idle (no additional data received since the last print operation) and a form boundary (bottom of the form according

to the Form Length setting for the current form) has been reached. If printing finishes and the form boundary has not been reached, take the printer off line and the FORM FEED button may be used to advance the form to the tear bar. This item may also be used to disable Auto-Scroll by setting the value to Off. When disabled, the FORM FEED button must always be used to advance the form to the tear bar.

Paper Out Fault Action

Paper Out Fault
Finish Page

Possible Values: Finish Page*
Reprint Page
Break Page

This item selects what action is to be taken when a paper out condition occurs. The action taken for each of the possible values is described in the following paragraphs.

When Finish Page is selected, the printer will attempt to print to the bottom of the page when a normal paper out condition occurs. Conditions that will prevent this from happening are when the end of paper is detected too far from the end of the form (the printer assumes there is not a complete page available), when reverse paper motion is attempted within the last one inch of the form, or when a paper jam occurs. If the printer is unable to finish printing the page, it will attempt to reprint the page as described below (also refer to the Reprint Page Size option which follows). Note that if highly precise printing is required in the last inch of the form, Finish Page may not provide accurate enough paper motion since the form is no longer controlled by the tractor mechanism .

When Reprint Page is selected, the printer will stop printing as soon as the end of paper or a paper jam condition is detected and the printer will go off line. After a new box of forms is loaded, the printer will attempt to reprint the current page from the beginning. If the printer is able to reprint the page, Reprinting Page! will be displayed when the new form is loaded (the previous partially printed page should probably be discarded). If the printer is unable to reprint the page, the page will be broken, Cannot Reprint - Page Too Large will be displayed, and printing will resume where it left off as described in the next paragraph. The printer's ability to complete the reprint successfully depends on whether the data for the current page is still in the printer's memory. Refer to the following Reprint Page Size option for more information regarding how much data may be retained.

When Break Page is selected, the printer will stop printing and go off line as soon as a paper out or paper jam condition is detected. After a new box of forms is loaded, printing will resume where it left off. The Break Page setting is appropriate when you know a page is too large to reprint (exceeds available buffer size, e.g. contains large graphic images). This will suppress the error message Cannot Reprint before printing continues.

Reprint Page Size

Page Size
8192 Characters

Possible Values: 0, …, 8192*, …, 28672

This item selects how much of the 32K byte input buffer is set aside for reprinting a page when Finish Page or Reprint Page has been selected for the Paper Out Fault Action item (see above). The value selected (0 to 28K bytes in 1K byte increments) should be set to accommodate the largest page expected, but not unnecessarily large since the larger this is set, the smaller the effective I/O buffer. The 8K byte default setting should be large enough to hold most pages of text, but may not be large enough to hold more complex or graphic filled pages. If the page size selected is not large enough, the page will be broken as described under Paper Out Fault Action item above.

If the Paper Out Fault Action item is set to Break Page, the Reprint Page Size may be set to 0 to allow the largest possible I/O buffer.

Ribbon Checking

Ribbon Check
On

Possible Values: On*, Off

This item selects whether or not ribbon checking is active. This feature works exclusively with Printek ribbons. When Ribbon Checking is On, the printer alerts the operator if a ribbon is not installed, or if the ribbon life has been reached (see Ribbon Life below). Ribbon Check may be turned off if these features are not desired.

Ribbon Check may also be turned off to allow the use of non-Printek brand ribbons. Using non-Printek ribbons may limit the warranty on the print head, so before turning Ribbon Check off, please read "Why Use Only Printek® Brand Ribbons" on page 8 and the warranty information on page

124. Note that turning this feature off while still using Printek brand ribbons will not affect the extended warranty.

Ribbon Life

Ribbon Life **23 Million Chars**

Possible Values: 5 … 23* … 30 Million Chars

This item sets the number of "draft equivalent" characters to be printed before the Change Ribbon message is displayed. "Draft equivalent" is an indication of the average density, or number of dots, in a draft font character. Characters printed using other fonts are weighted according to their own density. Typically, fast draft characters have fewer dots while letter quality and optical quality fonts have more and are weighted as fewer or more draft characters accordingly. Graphics data are weighted according to the actual number of dots printed.

TEST MENU

The TEST MENU is used to access some testing as well as some record keeping items. To access the test menu, enter Setup and press the MENU button until TEST MENU is displayed as shown below.

TEST MENU

Next press either of the ITEM buttons to access the test modes available.

Print the Menus

Print the Menus
No

Possible Values: No*, Menu Tree, Current Values, Both

This item may be used to print the entire menu tree or a list of current values.

Menu Tree will print all possible items in the menu and the possible values for each. This may be useful in case this manual is misplaced or the printer is upgraded to a newer version of firmware.

Current Values will print only the items relevant to the current printer configuration and their current values. This provides a means of record keeping or "backup", so that the values can be checked and restored in case an operator inadvertently changes one.

After setting this value, press ONLINE to begin printing. After printing is completed, the value of this item will automatically return to No. Note that once printing begins, taking the printer off line for any reason (ONLINE button pressed, ribbon lid or paper door opened, or a paper fault) will cause printing to be aborted.

Test Mode

Test Mode
Off

Possible Values: Off*, Barber Pole,
Hex Dump, Remote Setup

When this item is set to Barber Pole, the printer will print a rotating character pattern. Printing may be started and stopped with the ONLINE button.

When set to Hex Dump, the printer will print all received data in a special debug format which may be used by programmers to solve software problems. For more information, refer to the Hex Dump section of the *FormsMaster 8000 series Programmer's Manual*.

When set to Remote Setup, the printer is ready to receive a configuration setup file. See "Using Remote Setup" on page 91.

Form Construction and Layout Tips

FORM CONSTRUCTION

Although the FormsMaster 8000 series printers have been designed to handle difficult forms, you may come across a form that does not feed reliably or provide adequate print quality on all copies.

One of the main causes of paper misfeeds is a form that is "tented". Tenting is a tent-like bulge at the perforation when forms are unfolded from the box. The printer allows a maximum form thickness of 0.025 inches, which a badly tented form may exceed.

Tenting is usually caused by glue drying on the perforation after the forms maker puts the forms into the box, or forms which are not glued at all. Forms with solid glue lines which run vertically down the entire form are the most susceptible. If you experience such a problem, request "interrupted glue line" forms from your vendor. This method stops the glue approximately three-quarters of the way down the form and then resumes gluing at the top of the next form. The gluing should not begin too far below the top of the form or pages of the form will be able to fan apart and be a potential cause of jamming.

Another area where not all forms are alike is in the quality of carbon paper used, or in the way carbonless inks are applied. If the back copies of your form are too light, request a quick-release carbon or a higher quality carbonless inking method.

FORM LAYOUT CONSIDERATIONS

When designing preprinted forms, the most common problem is forms that are designed "too tight". This means that boxes where data have to be printed are just barely large enough for the data, and that even the slightest

misalignment will cause characters to be printed on at least one of the lines that form the box.

While the print alignment can be adjusted on the FormsMaster 8000 series printer to 1/100th of an inch, this is often too much to expect of the forms manufacturer. Where the preprinted information is placed in respect to the tractor holes on the form often varies on every other form in a single box of forms, or from one box of forms to the next.

To help avoid this situation, create larger areas for data by allocating blank lines in the printed data for horizontal lines, and allocating blank columns for vertical lines. If this is not possible due to the amount of data that has to be placed on the form, avoid using a dark color to form the preprinted lines and boxes. Use a lighter color, preferable other than a gray, that will allow the printed characters to still be read if misalignment occurs.

ERROR MESSAGES

This section provides a partial list of fatal errors. Fatal errors typically cannot be recovered from without the loss of data. In each case, ERROR is shown on the top line of the display and one of the following messages is shown on the bottom line. Suggested solutions for each of these messages are listed to the right of each error message in the table which follows. If the suggested solution does not solve the problem, please refer to "Obtaining Service" on page 88.

Note that none of these messages "flash" on the display. Messages which are flashed on the display are discussed in the "Common Error Conditions" section on page 36.

Other errors which are not listed here or in "Daily Operation" should be reported to the company where you purchased your printer, or to your nearest Authorized Service Center. If you do not know the name or number of your nearest Authorized Service Center, see "Obtaining Service" later in this section.

Error Message	Possible Solution
Head Stall	Check print head carriage area for obstructions.
Bad Setup Module	Check Setup Module to make sure it is attached securely. Replace Setup Module.

Error Message	Possible

	Solution
I/O Overflow	Make sure handshaking parameters set in the printer and at the host computer match each other.
	Make sure interface cables are wired correctly.
I/O Parity Error	Make sure parity setting in the printer and at the host computer match each other.
I/O Error	Make sure any optional interface is installed properly.

PREVENTIVE MAINTENANCE

Very little preventive maintenance is required by your FormsMaster 8000 series printer. It is only suggested that you periodically clear out any excessive paper dust.

Also, the various bearings used in the FormsMaster 8000 should not require any lubrication. If you do choose to lubricate any bearings, use only a 30 Wt. non-detergent motor oil. DO NOT use any grease or any vegetable based oils.

OBTAINING SERVICE

If your FormsMaster 8000 series printer should require service, please contact the company where you purchased the printer. If you do not know where the printer was purchased, please call 800-368-4636 to obtain the name and number of your nearest Printek Authorized Service Center or to arrange for factory service.

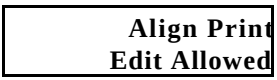
SECURITY MENU

The SECURITY MENU is for Information System managers who want to be able to set up a printer and then "lock out" operator changes to the various menus. This method of security may be set independently for the Align Print, the Forms menu, the Interface menu, or the Options menu.

When set to Edit Allowed, the user is allowed to make changes to any item in the menu selected. When set to View, the operator can look at the settings, but cannot edit, or change the values. When set to Initialize, the printer will reset all values in that menu (and associated submenus) to the factory default values and security will be set back to Edit Allowed.

The SECURITY MENU is more difficult to enter than other menus. To be able to access this menu, the printer must be powered on *while pressing* the MENU button. After the printer has finished its power up self-tests, enter Setup and press the MENU button until SECURITY MENU is displayed on the top line. Next press either of the ITEM buttons to begin setting security.

Align Print



Possible Values: Edit Allowed, View Only, Initialize

This item selects whether values set using Align Print (see Aligning Print on page 34) can be edited or only viewed by the operator. Initialize will reset the Align Print values for all forms to zero.

Forms Menu

Possible Values: Edit Allowed, View Only, Initialize

This item selects whether items in the FORMS MENU can be edited or only viewed by the operator. Initialize will reset the value of all the items for all forms to factory default values.

Interface Menu

Possible Values: Edit Allowed, View Only, Initialize

This item selects whether items in the INTERFACE MENU can be edited or only viewed by the operator. Initialize will reset the value of all the items for all interfaces to factory default values.

Options Menu

Possible Values: Edit Allowed, View Only, Initialize

This item selects whether items in the OPTIONS MENU can be edited or only viewed by the operator. Initialize will reset the value of all the items in the options menu to factory default values.

Using Remote Setup

The FormsMaster 8000 Series printers may be completely configured for operation by using the front panel buttons to access the printer setup menus. In addition, many of the items that can be configured via the front panel setup menus can also be configured remotely as described in this chapter.

Remote setup commands are placed in a remote setup file on a host computer. This file may then be sent to the printer. The remote setup file bust be a text only file with each line terminated by a Line Feed (LF) character.

The available commands listed below are shown with a combination of upper and lower case letters to enhance readability. However, the commands are not case sensitive. All characters are converted to upper case before processing (except for form names, which are contained in double quotes). White space may also be inserted to enhance readability; it will be stripped from the commands before processing.

Each line of the file is processed individually, and must conform to one of four possible formats:

1. A blank line (ignored).
2. A comment line, which begins with a semicolon "`;`" (ignored).
3. A heading line, which is enclosed in square brackets "`[]`".
4. An item setup line, of the format `item=value`.

Each item setup line must appear under the appropriate heading line. The first heading line in the file must be `[BeginPrintekSetup]`. The last heading line in the file must be `[EndPrintekSetup]`. All other heading lines and item setup lines are optional.

If any errors exist in the remote setup file, no changes will be made to the printer configuration. When possible, the printer will indicate the line number in the file where the first error occurred. Counting of lines begins with 1 at the `[BeginPrintekSetup]` heading line. Any lines preceding this will not be processed, and will not be counted.

Before sending the remote setup file to the printer, minimal setup is required via the front panel setup menus. The I/O interface to be used for remote setup must be configured appropriately to communicate with the host system, and the "Test Mode" item in the "TEST MENU" must be set to "Remote Setup".

After this is done, the printer will reset, beep the bell to alert the operator, and display the message "Waiting For Remote Setup". The remote setup file may now be sent to the printer.

After the printer receives the remote setup file (without error), all specified configuration changes will be made, the "Test Mode" item will revert back to "Off", and the printer will reset. When this reset is complete, the printer will be ready for normal interaction with the host system.

The available heading lines, and item setup lines, are documented below. Note that all the legal values are shown for each item, but in use only one value may be supplied in the setup file. An example file follows these definitions.

Remote Setup Line Definitions

```
[BeginPrintekSetup]
AlignPrint=FactoryDefaults
Forms=FactoryDefaults
Interfaces=FactoryDefaults
Options=FactoryDefaults
Security=FactoryDefaults

[Form0] ... [Form9]
MovePrintLeft=0.00 ... 9.99
MovePrintRight=0.00 ... 9.99
MovePrintUp=0.00 ... 9.99
MovePrintDown=0.00 ... 9.99
FormName="UPTO16CHARACTERS"
TractorPath=Front,Center,Rear,Center+Rear,
     Front+Center+Rear
AutomaticCut=No,Yes
LinesPerInch=6,8
FormLength=1 ... 227
TopMargin=0 ... 226
BottomMargin=0 ... 226
CharactersPerInch=10,12,13.3,15,16.74,17.14,20
LeftMargin=0 ... 268
RightMargin=4 ... 272
Font=Epson_FX_FD,Epson_FX_DF,Epson_FX_LQ,
     PC_English_FD,PC_English_DF,PC_English_LQ,
     PC_Latin2_FD,PC_Latin2_DF,PC_Latin2_LQ,
     DEC_LA120_FD,DEC_LA120_DF,DEC_LA120_LQ,
     EBCDIC_FD,EBCDIC_DF,EBCDIC_LQ,
     OCR_A_FD,OCR_B_FD
DraftSpeed=Normal,Fast
ImpactForce=Normal,High
Language=USA,France,Germany,England,Denmark,
     Sweden,Italy,Spain,Japan,Finland
Zero=Normal,Slashed
Unidirectional=No,Yes

[SerialInterface]
Emulation=ANSI_X3.64,Epson,IBM_Proprinter,
     DEC_LA120,TTY,Printek
```

```
AutoCR=Off,On
AutoLF=Off,On
HostFFatTOF=No,Yes
Characters=Control,Printable
MinimumBuffer=No,Yes
BaudRate=110,150,300,600,1200,2400,
     4800,9600,19200
DataBits=8,7
StopBits=1,2
Parity=None,Even,Odd
BusyPolarity=Low,High
DTR=Power,Online,Busy
XON/XOFF=Off,On
ETX/ACK=Off,On

[ParallelInterface]
Emulation=ANSI_X3.64,Epson,IBM_Proprinter,
     DEC_LA120,TTY,Printek
AutoCR=Off,On
AutoLF=Off,On
HostFFatTOF=No,Yes
Characters=Control,Printable
MinimumBuffer=No,Yes

[LanInterface]
Emulation=ANSI_X3.64,Epson,IBM_Proprinter,
     DEC_LA120,TTY,Printek
AutoCR=Off,On
AutoLF=Off,On
HostFFatTOF=No,Yes
Characters=Control,Printable
MinimumBuffer=No,Yes
```

```
[CoaxInterface]
PrinterEmulation=3287,3262
MaxPrintPosition=132,None
MaxPrintLine=66,None
FFonLocalCopy=Enable,Disable
FFValid=Anywhere,Column1orMPP+1
FFatEOM=Disable,Enable
PaperErrorReport=Disable,Enable
CharacterSet=Multinational,USA,Austria/Germany,
     Belgium,Brazil,CanadianFrench,
     Denmark/Norway,Finland/Sweden,France,
     Italy,Japan(English),Japan(Katakana),
     Portuguese,Spain,SpanishSpeaking,
     UnitedKingdom
LogicalNotCharacter=5Eh,E1h
NULSuppression=Disable,Enable
HostCPIControl=Enable,Disable
HostLPIControl=Enable,Disable
HostFormLength=Enable,Disable
BufferSize=4K,2K
DisplaySize=1920,2560,3440,3564,920

[TwinaxInterface]
PrinterEmulation=4214,5225,5256,4234
CharacterSet=Multinational,USA,Austria/Germany,
     Belgium,Brazil,CanadianFrench,
     Denmark/Norway,Finland/Sweden,France,Italy,
     Japan(English),Japan(Katakana),Portuguese,
     Spain,SpanishSpeaking,UnitedKingdom
LogicalNotCharacter=5Eh,E1h
HostPrintQuality=Enable,Disable
HostCPIControl=Enable,Disable
HostLPIControl=Enable,Disable
HostFormLength=Enable,Disable
HostBinSelect=Enable,Disable
```

```
[IPDS-CoaxInterface]
MaxPrintPosition=132,None
CRatMPP+1=CR,NL
NLatMPP+1=NL,2xNL
MaxPrintLine=66,None
FFonLocalCopy=Enable,Disable
FFValid=Anywhere,Column1orMPP+1
FFatEOM=Disable,Enable
FFOperation=FF,FF+Space
PaperErrorReport=Disable,Enable
CharacterSet=Multinational,USA,Austria/Germany,
     Belgium,Brazil,CanadianFrench,
     Denmark/Norway,Finland/Sweden,France,Italy,
     Japan(English),Japan(Katakana),Portuguese,
     Spain,SpanishSpeaking,UnitedKingdom
LogicalNotCharacter=5Eh,E1h
NULSuppression=Disable,Enable
HostImpactControl=Enable,Disable
HostBinSelect=Enable,Disable
BufferSize=4K,2K
DisplaySize=1920,2560,3440,3564,920

[IPDS-TwinaxInterface]
CharacterSet=Multinational,USA,Austria/Germany,
     Belgium,Brazil,CanadianFrench,
     Denmark/Norway,Finland/Sweden,France,Italy,
     Japan(English),Japan(Katakana),Portuguese,
     Spain,SpanishSpeaking,UnitedKingdom
HostImpactControl=Enable,Disable
HostBinSelect=Enable,Disable

[Imager/ImagerPlusInterface]
Emulation=QMSCodeVVersion2,
     PrintronixCodeVVersion2,PrintronixIGP
ControlCharacter=01h ... 09h,0Eh ... FFh
LineTerminator=LF,CR
BarCodeDensity=LowRes,MediumRes,HighRes,
     GraphicsMediumRes
```

```
QMSCharacterSet=USA,UnitedKingdom,
     Sweden/Finland,Norway/Denmark,Japan,
     Germany,France,Italy,Spain,PCSubset,
     CodeVVersion1
Translation=NotActive,Active
FreeFormat=NotActive,Active
IgnoreData=NotActive,Active
ImagerZero=Slashed,Normal
LineRegistration=NotMaintained,Maintained
VerticalDPI=72,70
VerticalTextSpacing=Version2,Version1
CodeVSpaceFields=Process,Ignore
IGPCharacterSet=ASCII,Germany,Sweden,Denmark,
     Norway,Finland,English,Dutch,
     France,Spain,Italy,Turkey
DeleteLogos=No,Yes
QuietMode=NotActive,Active
Spacing=IGP10/20/40,IGP30

[Options]
MaxFormAllowed=0 ... 9
AutoScroll=Off,1 ... 15
PaperOutFault=BreakPage,ReprintPage,FinishPage
PageSize=0K ... 28K
RibbonCheck=Off,On
RibbonLife=5 ... 30

[Security]
AlignPrint=ViewOnly,EditAllowed
FormsMenu=ViewOnly,EditAllowed
InterfaceMenu=ViewOnly,EditAllowed
OptionsMenu=ViewOnly,EditAllowed

[EndPrintekSetup]
```

Remote Setup Example File

The following example will set up three forms. Before the forms are set up, "AlignPrint" and all "Forms" will be reset to their factory default values so that only the "non-default" values have to be set.

The first form will begin printing one line from the top-of-form, be named "CHECKS", have a form length of 42 lines (7 inches at 6 LPI), and use the Epson FX Draft font.

The second form will begin printing two characters (at 10 CPI) from the left edge and two lines (at 6 LPI) from the top edge of the form. The name will be "INVOICES" and will print using the Epson FX Draft font.

The third form will begin printing two lines (at 8 LPI) from the top edge of the form. The name will be "REPORTS", and printing will be at eight LPI with a form length of 8_ inches.

```
;     Example setup file for three forms.

[BeginPrintekSetup]
AlignPrint=FactoryDefaults
Forms=FactoryDefaults
[Form0]
MovePrintDown=0.17
FormName="CHECKS"
FormLength=42
Font=Epson_FX_DF
[Form1]
MovePrintRight=0.20
MovePrintDown=0.33
FormName="INVOICES"
Font=Epson_FX_DF
[Form2]
MovePrintDown=0.25
FormName="REPORTS"
LinesPerInch=8
FormLength=68
CharactersPerInch=12
[EndPrintekSetup]
```

Using the Optional Setup Module

Introduction

The optional Setup Module is a small cartridge that plugs directly into the RS-232 Serial connector on the rear of any FormsMaster 8000 series printer. This module is used to store a second copy of the current Setup configuration of the printer. This may then be used to restore settings after a printer is serviced or to copy the same configuration settings to another printer. These uses are discussed immediately following the installation instructions.

Setup Module Installation

To install the Setup Module, perform the following steps.

1. Turn off power to the printer.
2. Disconnect the cable plugged into the serial port if one is present.
3. Plug the Setup Module into the serial port.
4. If a cable was present in step 2, reconnect it to the connector on the rear of the Setup Module.
5. Turn on power to the printer.
6. If this is not the first time the Setup Module has been connected to a printer, the printer will proceed with step 7.

   If this is the first time the Setup Module has ever been attached to a printer, the printer will temporarily display the following message and the ONLINE indicator will be yellow. When the message disappears, installation is complete and the printer will continue with its normal power up procedure.

Initializing Setup Module

7. The printer will now compare the configuration data in its internal memory to the data in the Setup Module. If the data are not an exact match, the printer will proceed with step 8.

   If the data in the printer and the data in the module are an exact match, installation is complete and the printer will complete its power up procedure.

8. The printer has now determined that the data in the Setup Module does not exactly match the data in the printer's internal memory. The printer will now display the following message, the ONLINE indicator will flash yellow and the bell will beep to get the operator's attention. Proceed to step 9.

New Setup Module Detected

9. Press the ONLINE button. The printer will now stop flashing the ONLINE indicator (will remain yellow) and display the following message. You must now make one of the selections as described below.

←Copy to Printer **←Copy to Module**

   If you wish to copy the Setup data *to the printer from the Setup Module*, press the button indicated by the arrow next to Copy to Printer (the SETUP button). The printer will display the following message and will now be configured according to the information that was in the Setup Module.

Copying Setup to Printer

If you wish to copy the Setup data *to the Setup Module from the printer,* press the button indicated by the arrow next to Copy to Module (the ALIGN PRINT button). The printer will display the next message and the Setup Module will now contain a copy of the Setup information in the printer.

Copying Setup to Module

After one of the above selections is made, installation is complete, the ONLINE indicator will be turned off and the printer will finish its power up procedure. If you are not sure which button to press, refer to either of the following sections for more information.

Using the Setup Module to Maintain a Backup Copy of Setup Information for a Single Printer

This use of the Setup Module provides a method of automatically maintaining a copy of the Setup configuration in case a printer should ever need to be repaired or if it is replaced under a service contract.

To use the Setup Module in this manner, you only need to perform the installation procedure once and then forget about it. The printer will automatically keep the Setup Module updated with any changes that are made to the printer using the front panel Setup as described in "Printer Configuration" beginning on page 39. As long as the Setup Module remains on the same printer, the installation procedure will not have to be repeated.

If the printer does someday require repair or replacement, simply perform the installation procedure again on the repaired or replacement printer and in step 9 choose "Copy to Printer". Depending upon what was repaired in the printer, the Setup information in the printer's memory may not have been changed. In this case the printer will power up normally and no message will be displayed.

Using the Setup Module to Copy Setup Data From One Printer to Another

This use of the Setup Module is beneficial when installing or updating several printers that need to be configured exactly the same. To do this, you will need to perform the installation procedure once for each printer.

First, install the Setup Module on the printer where the Setup data is to be copied from. If the printer determines that steps 8 and 9 are required, choose "Copy to Module" in step 9 and allow the printer's power up procedures to complete. If any additional changes need to be made to the configuration of this printer, enter Setup and make them before removing the Setup Module. Any changes made will automatically be stored both in the printer's internal memory and the Setup Module.

You may now power off the printer and remove the Setup Module. Remember to reconnect the serial cable if one was attached.

Now perform the installation procedure on each of the printers that are to be configured the same as the first. In step 9 be sure to choose "Copy to Printer". After the Setup Module is removed, remember to reconnect the serial cable if one was attached.

A Special Note Regarding Optional Interfaces

The Setup Module stores all the items which can be configured using Setup as described in "Printer Configuration" beginning on page 39 or "Using Remote Setup" on page 91. This includes the parameters for *all* of the optional interfaces, *even if they are not installed*.

This is not typically a problem since all the printers in an installation are typically configured with the same interfaces, but in cases where printers have different interfaces, it is important to understand what could happen.

When using the Setup Module to copy from a printer with no optional interface installed, it will just copy the default settings for *all* of the interfaces. This is only a problem if the printer being copied to does have one of these interfaces installed, because items previously set will be set back to the default values in the original printer. A similar situation might exist when copying between printers that have different optional interfaces installed.

When copying from a printer with an optional interface to one with no optional interface, the settings will still be copied, but will have no effect until that same interface is installed in the second printer.

Printer Reset Conditions

The following list describes conditions that are assumed whenever power is applied to the printer, changes have been made in SETUP, or a reset escape sequence is received (when the printer is operating in an emulation mode that supports such a sequence).

This list includes all variables that you can modify for all emulations, even though some emulations cannot modify all of the variables shown. Refer to the appropriate section of this manual for the emulation you are using.

Variable	Reset Condition
character pitch	according to current form setup
left margin	according to current form setup
right margin	according to current form setup
line pitch	according to current form setup
form length	according to current form setup
top margin	according to current form setup
bottom margin	according to current form setup
font	according to current form setup
impact mode	according to current form setup
language	according to current form setup
normal/slashed zero	according to current form setup
auto cut mode	according to current form setup
unidirectional mode	according to current form setup
top of form	set to current position
text in an incomplete line	discarded
input buffer	cleared (unless reset from host)
control of data bit 8	accepted as received
control character symbols	according to interface setup
italics	off
double high	off
double strike	off
double wide	off
emphasized	off
superscript/subscript	off
underline	off
horizontal tabs	to every eight columns
vertical tabs	cleared

Control Code and Escape Sequence Summaries

ANSI X3.64 EMULATION

BEL	Bell
BS	Backspace
CR	Carriage Return
CSI	Control Sequence Introducer
ESC D	Line Feed
ESC E	New Line
ESC ESC *n*	Select Software Interface *n*
ESC H	Set Horizontal Tab Stop
ESC J	Set Vertical Tab Stop
ESC K	Partial Line Down
ESC L	Partial Line Up
ESC [*n1* ; *n2* SP G	Set Character and Line Spacing
ESC [*n* `	Absolute Horizontal Tab
ESC [*n* a	Relative Horizontal Tab
ESC [*n* d	Absolute Vertical Tab
ESC [*n* e	Relative Vertical Tab
ESC [g	Clear Horizontal Tab Stop
ESC [0 g	Clear Horizontal Tab Stop
ESC [1 g	Clear Vertical Tab Stop
ESC [2 g	Clear All Horizontal Tab Stops
ESC [3 g	Clear All Horizontal Tab Stops
ESC [4 g	Clear All Vertical Tab Stops
ESC [20 h	Select Automatic Carriage Return
ESC [20 l	Cancel Automatic Carriage Return
ESC [*n* m	Select Graphic Rendition
ESC c	Reset
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
HTS	Set Horizontal Tab Stop
IND	Line Feed
LF	Line Feed
NEL	New Line
PLD	Partial Line Down
PLU	Partial Line Up
VT	Vertical Tab

VTS	Set Vertical Tab Stop

EPSON FX EMULATION

BEL	Bell
BS	Backspace
CAN	Cancel Line
CR	Carriage Return
DC2	Cancel Condensed Mode
DC3	Deselect Printer
DC4	Cancel Double-Wide Mode (one line)
DEL	Delete Character
ESC ! *n*	Master Print Mode Select
ESC #	Cancel MSB Control
ESC $ *n1 n2*	Absolute Horizontal Tab
ESC * *m n1 n2 data*	*m* DPI Graphics
ESC - *n*	Underline Mode
ESC 0	Select 8 LPI
ESC 1	Set Line Spacing to 7/72"
ESC 2	Select 6 LPI
ESC 3 *n*	Set Line Spacing to *n*/216"
ESC 4	Select Italic Mode
ESC 5	Cancel Italic Mode
ESC 6	Enable Printing of High Symbols
ESC 7	Disable Printing of High Symbols
ESC <	Unidirectional Mode (one line)
ESC =	Set MSB to 0
ESC >	Set MSB to 1
ESC @	Reset
ESC A *n*	Set Line Spacing to *n*/72"
ESC B *n1 n2 ... nx* NUL	Set Vertical Tab Stops
ESC C NUL *n*	Set Form Length in Inches
ESC C *n*	Set Form Length in Lines
ESC D *n1 n2 ... nx* NUL	Set Horizontal Tab Stops
ESC E	Select Emphasized Mode
ESC EM *n*	Load Form
ESC ESC *n*	Select Software Interface *n*
ESC F	Cancel Emphasized Mode
ESC G	Select Double-Strike Mode
ESC H	Cancel Double-Strike Mode
ESC I *n*	Printing of Low Symbols
ESC J *n*	Variable Distance Line Feed
ESC K *n1 n2 data*	60 DPI Graphics
ESC L *n1 n2 data*	120 DPI Graphics
ESC M	Select 12 CPI
ESC N *n*	Set Perforation Skip

EPSON FX EMULATION (CONT.)

ESC O	Cancel Perforation Skip
ESC P	Select 10 CPI
ESC Q *n*	Set Right Margin
ESC R *n*	Select International Character Set
ESC S *n*	Select Subscript or Superscript Mode
ESC SI	Select Condensed Mode
ESC SO	Select Double-Wide Mode (one line)
ESC T	Cancel Subscript and Superscript Mode
ESC U *n*	Unidirectional Mode
ESC W *n*	Double-Wide Mode
ESC Y *n1 n2 data*	High Speed 120 DPI Graphics
ESC Z *n1 n2 data*	High Speed 240 DPI Graphics
ESC \ n1 n2	Relative Horizontal Tab
ESC g	Select 15 CPI
ESC j *n*	Variable Distance Reverse Line Feed
ESC k *n*	Select Font
ESC l *n*	Set Left Margin
ESC t *n*	Character Table (Italic vs. Extended)
ESC w *n*	Double-High Mode
ESC x *n*	Select Draft or Letter Quality
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
LF	Line Feed
SI	Select Condensed Mode
SO	Select Double-Wide Mode (one line)
VT	Vertical Tab
XOFF	Deselect Printer

IBM PROPRINTER EMULATION

BEL	Bell
BS	Backspace
CAN	Cancel Line
CR	Carriage Return
DC2	Select 10 CPI
DC4	Cancel Double-Wide Mode (one line)
ESC - *n*	Underline Mode
ESC 0	Select 8 LPI
ESC 1	Set Line Spacing to 7/72"
ESC 2	Start Line Spacing
ESC 3 *n*	Set Line Spacing to *n*/216"
ESC 4	Set Top of Form
ESC 5 *n*	Automatic Line Feed
ESC 6	Select Character Set 2
ESC 7	Select Character Set 1
ESC :	Select 12 CPI
ESC A *n*	Set Line Spacing to *n*/72"
ESC B *n1 n2 ... nx* NUL	Set Vertical Tab Stops
ESC C NUL *n*	Set Form Length in Inches
ESC C *n*	Set Form Length in Lines
ESC D *n1 n2 ... nx* NUL	Set Horizontal Tab Stops
ESC E	Select Emphasized Mode
ESC ESC *n*	Select Software Interface *n*
ESC F	Cancel Emphasized Mode
ESC G	Select Double-Strike Mode
ESC H	Cancel Double-Strike Mode
ESC I *n*	Select Print Mode
ESC J *n*	Variable Distance Line Feed
ESC K *n1 n2 data*	60 DPI Graphics
ESC L *n1 n2 data*	120 DPI Graphics
ESC N *n*	Set Perforation Skip
ESC O	Cancel Perforation Skip
ESC Q *n*	Deselect Printer
ESC R	Reset Horiz. and Vertical Tab Stops
ESC S *n*	Select Subscript or Superscript Mode
ESC SI	Select Condensed Mode
ESC SO	Select Double-Wide Mode (one line)
ESC T	Cancel Subscript and Superscript Mode
ESC U *n*	Unidirectional Mode
ESC W *n*	Double-Wide Mode
ESC X *n1 n2*	Set Left and Right Margin
ESC Y *n1 n2 data*	High Speed 120 DPI Graphics

IBM PROPRINTER EMULATION (CONT.)

ESC Z *n1 n2 data*	High Speed 240 DPI Graphics
ESC [*@ n1 n2 m1 m2 m3 m4*	Double-High Mode
ESC \ *n1 n2*	Print Characters
ESC ^ *n*	Print Single Character
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
LF	Line Feed
SI	Select Condensed Mode
SO	Select Double-Wide Mode (one line)
VT	Vertical Tab

LA-120 EMULATION

BEL	Bell
BS	Backspace
CR	Carriage Return
CSI	Control Sequence Introducer
DEL	Delete
ESC (*a*	Select International Character Set
ESC 1	Set Horizontal Tab Stop
ESC 2	Clear All Horizontal Tab Stops
ESC 3	Set Vertical Tab Stop
ESC 4	Clear All Vertical Tab Stops
ESC D	Line Feed
ESC E	New Line
ESC ESC *n*	Select Software Interface *n*
ESC H	Set Horizontal Tab Stop
ESC J	Set Vertical Tab Stop
ESC [	Control Sequence Introducer
ESC [*n* `	Absolute Horizontal Tab
ESC [*n* a	Relative Horizontal Tab
ESC [c	Printer Identification
ESC [0 c	Printer Identification
ESC [*n* d	Absolute Vertical Tab
ESC [*n* e	Relative Vertical Tab
ESC [g	Clear Horizontal Tab Stop
ESC [0 g	Clear Horizontal Tab Stop
ESC [1 g	Clear Vertical Tab Stop
ESC [2 g	Clear All Horizontal Tab Stops
ESC [3 g	Clear All Horizontal Tab Stops
ESC [4 g	Clear All Vertical Tab Stops
ESC [20 h	Select Automatic Carriage Return
ESC [20 l	Cancel Automatic Carriage Return
ESC [*n* m	Select Graphic Rendition
ESC [*n1* ; *n2* r	Set Top and Bottom Margins
ESC [*n1* ; *n2* s	Set Left and Right Margin
ESC [*n* t	Set Form Length in Lines
ESC [*n1* ; *n2* ; … *nx* u	Set Horizontal Tab Stops
ESC [*n1* ; *n2* ; … *nx* v	Set Vertical Tab Stops
ESC [*n* w	Set Character Spacing
ESC [*n* z	Set Line Spacing
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
HTS	Set Horizontal Tab Stop

LA-120 EMULATION (CONT.)

IND	Line Feed
LF	Line Feed
NEL	New Line
VT	Vertical Tab
VTS	Set Vertical Tab Stop

SIMPLE TTY EMULATION

BEL	Bell
BS	Backspace
CR	Carriage Return
ESC ESC *n*	Select Software Interface *n*
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
LF	Line Feed
VT	Vertical Tab

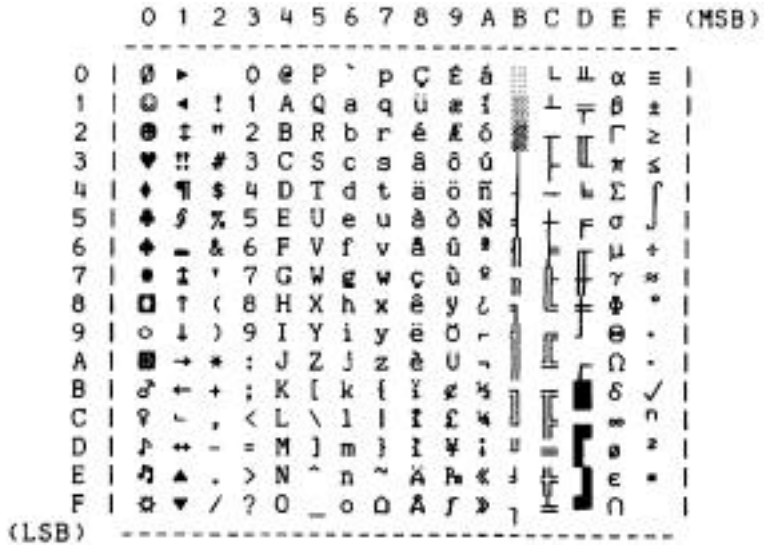
PRINTEK EMULATION

BEL	Bell
BS	Backspace
CR	Carriage Return
DC3	Deselect Printer
ESC # *m n1 n2 data*	*m* DPI Graphics
ESC %	Line Feed Boundary
ESC * *m n1 n2 data*	*m* DPI Graphics
ESC @	Reset
ESC A *n*	Automatic Modes
ESC B *n*	Auto Cut Mode
ESC C	Cut
ESC D *n*	Double-Strike Mode
ESC E *n*	Emphasized Mode
ESC ESC *n*	Select Software Interface *n*
ESC F *n*	Select Font
ESC FF *n*	Set Form Length in Lines
ESC G *n*	Modify Print Head Gap
ESC H *n1 n2*	Set Left and Right Margin
ESC HT *n1 n2* ... *nx* NUL	Set Horizontal Tab Stops
ESC I *n*	Set Print Head Force
ESC L *n*	Load Form
ESC LF *n*	Set Line Spacing to *n*/288"
ESC Q *n*	Select Font Quality
ESC R	Reset Horiz. and Vertical Tab Stops
ESC S *n*	Select Script Modes
ESC SP *n*	Set character Spacing
ESC U *n*	Unidirectional Mode
ESC V *n1 n2*	Set Top and Bottom Margins
ESC VT *n1 n2* ... *nx* NUL	Set Vertical Tab Stops
ESC W *n*	Double-Wide Mode
ESC \ *n*	Print Single Character
ESC ^	Reverse Line Feed
ESC _ *n*	Underline Mode
ETX	End of Text
FF	Form Feed
HT	Horizontal Tab
LF	Line Feed
VT	Vertical Tab
XOFF	Deselect Printer

ASCII Character Tables

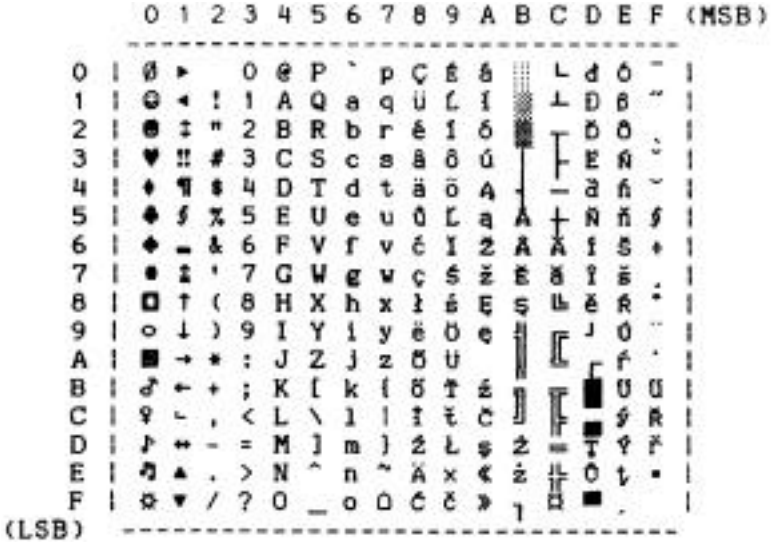
	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	(MSB)
0	à	§		0	@	P	`	p	à	§		0	@	P	`	p	
1	è	ß	!	1	A	Q	a	q	è	ß	!	1	A	Q	a	q	
2	ù	Æ	"	2	B	R	b	r	ù	Æ	"	2	B	R	b	r	
3	ò	æ	#	3	C	S	c	s	ò	æ	#	3	C	S	c	s	
4	¦	Ø	$	4	D	T	d	t	¦	Ø	$	4	D	T	d	t	
5	'	ø	%	5	E	U	e	u	'	ø	%	5	E	U	e	u	
6	£	¨	&	6	F	V	f	v	£	¨	&	6	F	V	f	v	
7	¡	Ä	'	7	G	W	g	w	¡	Ä	'	7	G	W	g	w	
8	¿	Ö	(	8	H	X	h	x	¿	Ö	(	8	H	X	h	x	
9	Ñ	Ü	)	9	I	Y	i	y	Ñ	Ü	)	9	I	Y	i	y	
A	ñ	ä	*	:	J	Z	j	z	ñ	ä	*	:	J	Z	j	z	
B	¤	ö	+	;	K	[	k	{	¤	ö	+	;	K	[	k	{	
C	₧	ü	,	<	L	\	l	¦	₧	ü	,	<	L	\	l	¦	
D	Å	É	-	=	M	]	m	}	Å	É	-	=	M	]	m	}	
E	å	é	.	>	N	^	n	~	å	é	.	>	N	^	n	~	
F	ç	¥	/	?	O	_	o	Ø	ç	¥	/	?	O	_	o	Ø	
(LSB)																	

Epson FX Font Character Set



PC Font Character Set

EBCDIC Font Character Set



PC Latin 2 (Slavic) Font Character Set

OCR-A Font Character Set

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	(MSB)
0				0	@	P	`	p									
1			!	1	A	Q	a	q									
2			"	2	B	R	b	r									
3			#	3	C	S	c	s									
4			$	4	D	T	d	t									
5			%	5	E	U	e	u									
6			&	6	F	V	f	v									
7			'	7	G	W	g	w									
8			(	8	H	X	h	x									
9			)	9	I	Y	i	y									
A			*	:	J	Z	j	z									
B			+	;	K	[	k	{									
C			,	<	L	\	l	|									
D			-	=	M	]	m	}									
E			.	>	N	^	n	~									
F			/	?	O	_	o	■									
(LSB)																	

OCR-B Font Character Set

Specifications

PRINT SPEEDS

Text Modes	Speed
Fast Draft	800 cps
Draft	600 cps
Fast Draft High Impact	400 cps
Draft High Impact	300 cps
Letter Quality	150 cps
Optical Quality	100 cps

Graphics Modes	Speed (up to) *
8 Wire Graphics	19,200 dps
8 Wire Fast Graphics	25,600 dps
9 Wire Graphics	21,600 dps
9 Wire Fast Graphics	28,800 dps

CHARACTER MATRIX

Fast Draft 7x9 in 9x9 cell.
Draft 9x9 in 12x9 cell.
Letter Quality 18x18 in 24x18 cell.
Optical Quality 27x18 in 36x18 cell.

GRAPHICS DENSITY

60 to 240 dpi horizontally x 72 dpi vertically. *

CHARACTER SETS

Epson FX fast draft, draft and letter quality.
IBM Proprinter fast draft, draft and letter quality.
EBCDIC fast draft, draft and letter quality.
Latin II (Slavic) fast draft, draft, and letter quality.
OCR-A optical quality.
OCR-B optical quality.

CHARACTER SPACING

5, 6, 6.7, 7.5, 8.4, 8.6, 10, 12, 13.3, 15, 16.7, 17.1, and 20 cpi. *

LINE SPACING

6 lpi, 8 lpi, or programmable in 1/216th or 1/288th of an inch. *

LINE LENGTH

13.6 inches.

CONTROL CODE AND ESCAPE SEQUENCE EMULATIONS

ANSI X3.64
Epson FX
IBM Proprinter
DEC LA-120
Simple TTY
Printek
Basic Bar Code

PAPER HANDLING

Bottom tractor feed with pinch roller exit.
Straight paper path with zero waste tear off.
Paper width: 2.5 to 15 inches.
Paper Slew Rate: 16 inches per second.

RIBBON

23,000,000 character, mobius loop cartridge.

SPECIAL FORMS HANDLING FEATURES

Print up to six part forms (.025" maximum thickness).
Easy access to tractors.
Front panel and host form selection.
Automatic head gap.
Paper out sensing.
Paper motion sensing.
Paper edge sensing.
Page reprint.
Automatic path switching for same form in more than one path.

Nonvolatile memory for ten form setups. Parameters for each form include: custom form name, tractor path (only in FormsMaster 8003), automatic forms cutting (only if FormsCutter is installed), cpi, left margin, right margin, lpi, form length, top margin, bottom margin, font, character impact mode, language*, slashed or nonslashed zero, and unidirectional printing.

COMPUTER INTERFACE

Automatic port arbitration (sharing) between the parallel, serial, and optional interface (if installed).

Centronics compatible Parallel.

Asynchronous RS-232: 110 to 19,200 baud; Even, Odd, or No parity; 7 or 8 data bits; 1 or 2 stop bits; XON/XOFF, ETX/ACK, and Hardware handshake.

Input Buffer Size: 32K bytes.

OPERATOR CONTROLS/INDICATORS

Normal Operating Mode

Indicators: Online/Status LED; 2x16 character LCD for current form selection (and paper path in FormsMaster 8003), on/off line status and error descriptions.

Controls: Online, Form Feed/Load, Form Select/Unload, Align Print, and enter Setup.

Setup Mode

Indicators: Online/Status LED indicates Setup mode is active.

Controls: Menu, Submenu, Items, Values.

Setup Features: Forms Menu for setting form and printing parameters, Interface Menu for setting all I/O parameters, Option Menu for setting/installing option parameters, Test Menu, and Security Menu for disabling changes to interface, form, and option settings.

RELIABILITY

Unit automatically measures and sets operating parameters each time unit is powered on.

Forced air cooling.

MTBF 10,000 hours on electronics, 100% duty cycle.

Print head life of 500,000,000 draft mode (or equivalent) characters.

Printer life excluding print head of 1,000,000 pages.

WARRANTY

Printer: One year limited warranty for defects in materials and/or workmanship.

Print Head: 500 million draft equivalent character life. One year limited warranty for defects in materials and/or workmanship. Limited print head warranty may be extended to a two years with the use of only Printek® brand ribbons.

ENVIRONMENTAL SPECIFICATIONS

Power requirements: 120 VAC ±10%, 60Hz.

Power consumption:60 W non-printing, 225 W printing.

Heat Output: 205 Btu/Hr. Idle, 768 Btu/Hr. Printing.

Audible noise: ≤55 dBA when used with a
Printek FormsMaster 8000 print stand..

Operating Temperature: 50°F to 95°F.

Relative Humidity: 20% to 80% non-condensing.

Physical Size: 11.8" High x 26.25" Wide x 20.5" Deep.

Weight: 63 lbs (74 lbs shipping).

OPTIONS

Coaxial/Twinaxial Interface
Coaxial IPDS Interface
Twinaxial IPDS Interface
Ethernet 10BaseT Interface
Imager or ImagerPlus Graphics Co-Processor
Paper Cutter
Setup Module
Print Stand
240 VAC ±10%, 50Hz. Power Supply

* May be emulation dependent.

Specifications subject to change without notice.

Glossary of Terms

ANSI	American National Standards Institute.
ASCII	American Standard Code for Information Interchange.
baud rate	The bit rate at which characters are transmitted over a serial interface.
binary	Base two numbering system. Digits are represented by the characters 0 and 1.
bit	A single binary digit.
control code	A single, non-printing character which is used to control the configuration or operation of the printer.
character pitch	The horizontal spacing of characters. Measured in cpi.
cpi	Characters-per-inch.
cps	Characters-per-second.
current line	The line upon which the next character will be printed.
current print position	The column on the current line where the next character will be printed.
default	Value or configuration that is assumed when the printer is turned on or reset.
DF	Draft Font.
dpi	Dots-per-inch. Generally used to refer to graphics density or resolution.
draft	Refers to the draft font.
EBCDIC	Extended Binary Coded Decimal Interchange Code.

escape sequence	String of characters beginning with the escape (ESC) character which is used to control the configuration or operation of the printer. The characters which are part of this string are not printed.
fast draft	Refers to the fast draft font.
FD	Fast Draft.
font	A group of characters of a given shape or style.
FormsMaster	A superior line of serial matrix printers.
hexadecimal	Base sixteen numbering system. Digits are represented by the characters 0 through 9 and A through F.
interface	Generally refers to the connection between the printer and the host computer. May also be used in reference to the user interface at the control panel of the printer.
LCD	Liquid-Crystal Display.
LED	Light-Emitting Diode.
line pitch	The vertical spacing of characters. Measured in lpi.
lpi	Lines-per-inch.
LQ	Letter Quality.
MSB	Most-significant bit or byte. In a character, this refers to bit seven (of 0 to 7).
octal	Base eight numbering system. Digits are represented by the characters 0 through 7.
offline	Refers to the state of the printer when the ONLINE indicator is not solid green and the printer does not respond to the host computer.

online	Refers to the state of the printer when the ONLINE indicator is solid green and the printer able to respond to the commands and text received from the host computer.
OQ	Optical Quality.
parity	A method used for detecting errors within a single character transmitted or received via an interface.
reset	Initialization of various operating parameters of the printer to the value or state assumed when the printer is powered on (default value).
top of form	The vertical position where the first line is printed on the paper. Also the position the paper is advanced to when a form feed (FF) character is received from the host or the FORM FEED button is pressed on the printer's control panel.
tractors	Devices which control the movement of the paper through the printer.